

COAL AGE

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If We Cannot Be Just, Let Us Be At Least Prudent

By R. DAWSON HALL



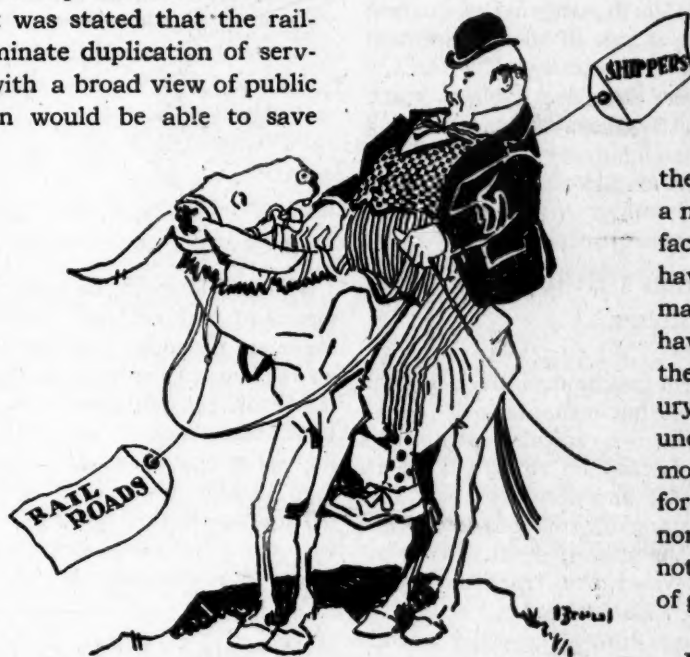
UBLIC opinion regarding Government ownership has travelled in the last year or so from the aggressive to the defensive. When in the war, Government management of public utilities was advocated, it was urged on us because private ownership was believed to be wasteful and inefficient. It was stated that the railroads would be able to eliminate duplication of service, would be conducted with a broad view of public needs, and that the nation would be able to save money where the railroads were wasting it. Now we are told pathetically that—how the viewpoint has changed!—federal does not compare unfavorably with private management, which also is not so wonderfully frugal in its operation.

During the war we were assured by the socializers that with the Government in charge there would be no strikes. Now the tune changes and we are coaxed to an uncertain comfort by the reflection that there would have been at least as many disputes between capital and labor had private corporations held the reins. Before Government took hold we were informed that there would be, after the first few months, no inadequacies in service. Now we are only asked to believe that the railroads, if they are again placed under private control, will be just as unequal as the Government to meeting public requirements.

Freight rates, as established, have been such as to discourage the purchase of absolutely necessary

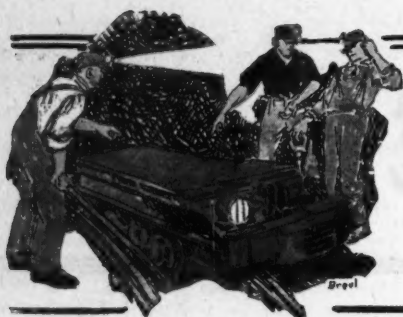
equipment. Thus they have made every period of national prosperity a moment of peril, lest transportation fail at a crucial juncture. They have caused industry of all kinds to run part time and they are to be blamed for the high prices which an undue constriction of the market inevitably causes. For

this reason, surely, it would be the better plan to put up freight rates high enough to make prosperity absolutely sure and bring them down if it is found that a mistake has been made. In fact, seeing that the railroads have had short commons for many years, why not let them have, even for a year, some of the prosperity which the luxury industries have enjoyed unchecked from time immemorial? A year in the sun for them with the makers of non-essentials would seem not an over-liberal measure of generosity.



IMPOVERISHED STEED (to Overfed Driver)—"If you would ride me, you must also feed me."

If the public must control their profits, let them be restricted to dividends, far below those earned and permitted to the automotive industries, and be required to spend the excess in suitable reconstructive work and in the purchase of much-needed equipment. If we do not like the railroads, if we must treat them as pariahs to work for us with a minimum of personal well being, let us at least give them a chance to become competent servants of the public instead of the weak, unstable creatures they now are. The Cummins bill is no solution of the railroad problem. The difficult question will be with us again and again till justice is done, for in the long run the public pays for its injustices and pays dearly



IDEAS AND SUGGESTIONS

PRACTICAL SCHEMES THAT MAKE THE DAY'S WORK EASIER

An Electric Motor and Gasoline Engine Driven Fire Pump

It is always desirable to have two independent sources of power for a fire pump so as to lessen the chances of its being put out of commission when a fire occurs. In some states, a double drive is required by the Underwriter's regulations. The usual form of drive is a steam engine and electric motor, though where there are two separate sources of current, two electric motors are frequently used. Sometimes neither steam nor a second source of current is available, and in that case a pump can be coupled up to a gasoline engine which may constitute the independent source of power. As an illustration, a pump of 1500 gal. per min. capacity can be driven by a suitable 150 lb., alternating-current motor and a 140 hp. gasoline engine of some convenient type and make.

For use in the mines where fires are liable to start, no matter what precaution has been taken, resulting perhaps in a great loss. The combination of an electric motor and gasoline-engine driven fire pump might prove highly serviceable.

A Trackman's Rule

J. H. RITTER

Belington, W. Va.

The advantages of certain mechanical devices such as the slide rule for engineering computations is well recognized. There are, however, certain calculations that cannot be made with facility on this instrument. In order to perform with ease and accuracy the calculations necessary for the laying of switches and other track work in and about the mines, J. H. Ritter of Belington, W. Va., has devised the trackman's rule shown in the accompanying illustration.

This consists of two arms, hinged together at one end and bearing exactly similar divisions, together with a protractor attached to one of the arms with its center at the hinge, and a rule standing at right angles to this same arm and sliding upon it. Both arms and the sliding cross piece are graduated in divisions representing feet to some convenient scale. The sliding arm in its attachment to the scale upon which it travels (which scale is known as the fixed radius rod) is provided with a window carrying a black crosshair and a red crosshair 0.5 division from it.

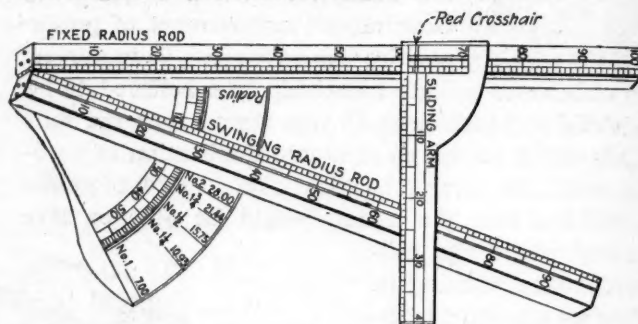
Now suppose that it is desired to find the lead of a switch on a curve of 63 ft. radius. Set the sliding arm (black crosshair) on the 63 ft. division of the fixed radius rod; move the swinging radius rod until the same division (63) just touches the edge of the sliding arm. As may be seen in the accompanying illustration this will be at division 21. This shows that the lead from point of frog to point of switch should be just 21 ft.

The frog number, as is well known, is the switch lead divided by twice the track gage. In this case, assuming that the gage is 42 in., the frog number will be

$$\frac{21}{2 \times 3.5} = 3,$$

showing that a No. 3 frog is required.

In addition to calculating trackwork, latitudes and departures, sines and cosines may be found with this instrument for angles within the limits of the sliding arm. The distance centre to centre of rooms not at right angles to the heading may also be found.



TRACKMAN'S RULE-BEING USED FOR COMPUTATION

The employment of some easy, rapid and accurate means of making track calculations will go far toward securing properly constructed tracks. These in turn go far toward insuring satisfactory operation and service from transportation equipment. As all mining men know bad track is responsible for more wrecks than any other one cause. It takes a skilful driver or motorman to haul coal safely over improperly proportioned or improperly laid frogs and switches while the veriest tyro can safely haul it over track that is designed and constructed correctly.

Bringing Out Over-Exposed Blueprints*

S. F. GIBSON

St. Louis, Mo.

When blueprints have been permitted to remain in the printing frame for such a long time that they are over-exposed, they may be restored almost to their normal color by adding about one-teaspoonful of hydrogen-peroxide solution to each quart of the water in which they are washed.

The procedure is to first wash the prints in clear running water, until all the blue liquid which results has been washed away. The prints then are soaked in the peroxide solution until the proper color appears. After this, the prints are again washed thoroughly in clear water. A print which has had the correct exposure or one which has been under-exposed, will not be adversely affected by the process.

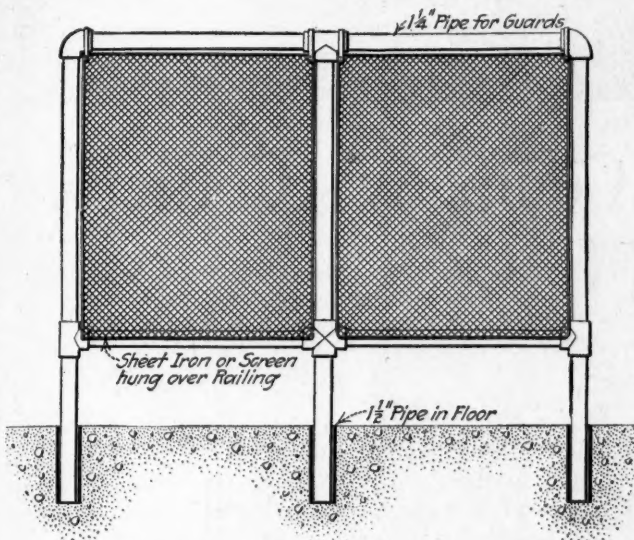
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Guard Railings

BY G. E. DOUGHERTY
Pikeville, Ky.

Permanent guards around stationary machinery are frequently the cause of the machine being left unguarded because of the guards being taken down and not promptly replaced. To overcome this danger and the inconvenience in making repairs a removable guard is more satisfactory.

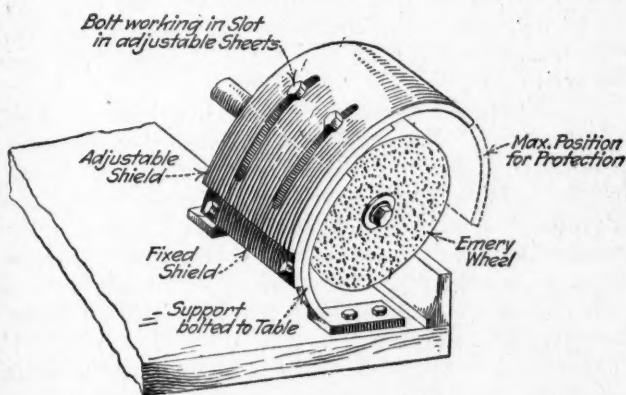
An adequate guard can be built by any one with a



RAILINGS IN PLACE

set of pipe tools, by placing holes in the floor around the machinery to be protected and placing short lengths of pipe in them flush with the floor. The pipe in the floor should be made just enough larger than the pipe used in making the guard or fencing so that the latter will fit snugly but may be lifted easily out when desired. The accompanying sketch shows how the guard is held in place.

Safety Device for Emery Wheel



As emery wheels have a tendency at times to break and fly to pieces the master mechanic of the Burnside Colliery of the Philadelphia & Reading Coal & Iron Co. near Shamokin, Pa., has designed a special adjustable shield to cover such wheels.

This shield consists of two iron brackets bolted to the frame under the wheel and passing around to the top. These two brackets are connected with a piece of sheet iron bolted rigidly to them. Another piece of sheet iron goes over the top of the first piece and

is provided with two slots through which are placed bolts. The slots allow this piece of iron to be adjusted over the emery wheel to any desired point. When in the proper position the bolts are tightened and the sheet iron stays in place giving full protection.

The only part of the emery wheel then exposed is that portion that the operator is actually using. The accompanying drawing shows the idea in detail.

Electric Drive for Breaker Machinery

The St. Clair Coal Co. at St. Clair, Pa., has done away with the corliss engine driving the breaker machinery and substituted an electric drive. It now employs a 600-hp., 2,200-volt, 3-phase, 60-cycle General Electric alternating-current motor.

The one unusual feature about this installation is that the old crank disk of the corliss engine has been utilized for one-half of the clutch between the end of the chain drive and the bull wheel. From the motor to the bull wheel the drive is by means of a Link Belt silent chain.

The company has been using steam drive, but after the change from steam to electric it was able to abandon its boiler plant, which was out of date and inefficient, and purchase its power from a central station located at Pottsville, Pa. As the current furnished is 2200 volts it is not necessary to install a sub-station.

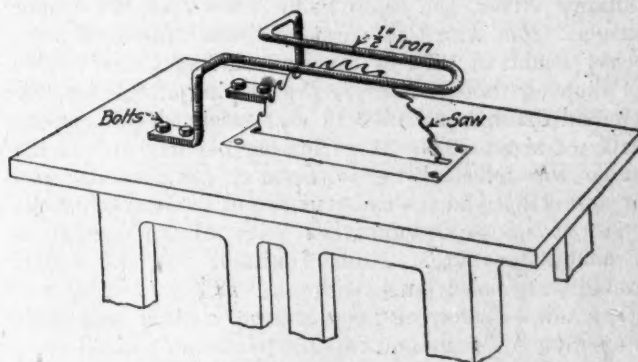
Electric drives appeal both to the designer of mining machinery and to the engineer responsible for the upkeep of the mechanical equipment. The absence of long drive shafts and belting simplifies the design of breakers and also largely does away with many troubles incident to such devices. Group electric drives are advocated by some engineers rather than the use of individual motors for each piece of equipment; for example, one motor for a group of jigs.

Guard for Circular Saw

BY G. E. DOUGHERTY
Pikeville, Ky.

Adequate guards for dangerous machinery are often a hindrance to ease in operation or to working about the guarded machine.

A fairly satisfactory home-made guard for a circular



GENERAL VIEW OF THE SAW GUARD

saw is being used in the car shop of the Blue Beaver Coal Co. of Prestonburg, Ky.

This is composed of a $\frac{1}{2}$ in. iron rod so bent as to cover the saw a few inches above it. This guard is bolted to the saw stand. The arrangement can be so set as to allow any piece of timber to pass under the guard. The sketch explains the arrangement.



Granby Consolidated Company's Colliery, Cassidy, B. C.

BY R. R. WILSON
Cassidy, B. C.

THE Granby Consolidated Mining, Smelting & Power Co. has been one of the most enterprising organizations operating in Canada. This company has developed the two largest copper smelters and the second largest copper mine in the British Empire and has now provided the province of British Columbia with its first modern byproduct coking plant and a coal mine that represents the last word in what has been called the industrial betterment movement.

The colliery is situated at Cassidy, about 8 miles south of Nanaimo on Vancouver Island. It was acquired and opened mainly to insure a supply of coke for the copper smelter at Anyox. At this point a bed of coal about 10 ft. in thickness outcrops in the bed of the Nanaimo River, the seam being known as the Upper Douglas from which the first coal was mined on Vancouver Island in 1852 by the Hudson Bay Co.

Following the satisfactory prospecting of the area by diamond drilling, a saw mill was erected having a capacity of about 20,000 ft. of lumber per day and as the timber was felled on the townsite it was cut into lumber and utilized in the construction of various buildings or stored for use in connection with mining operations at some later date. Timber suitable for use underground was stored until required.

The townsite having been cleared, a start was made in opening the mine and the first coal was hoisted from the main slope in June, 1918. This slope was sunk through gravel and quicksand, necessitating the use of tongued and grooved spiling. A railroad spur was then constructed for $\frac{1}{2}$ mile connecting with the Esquimalt & Nanaimo Ry., and a temporary loading plant installed so that coal could be shipped as development work progressed and until the permanent tippie and washery could be constructed.

This done plans were prepared setting aside ground

for a residential section, a mine and plant section as well as details of streets, water works, sewerage and electric lighting systems, recreation ground, flower gardens, and sites for various buildings in order to meet as fully as possible the requirements of the industry and its community of employees.

This colliery was developed to furnish coal to the byproduct coke plant at Anyox. Town and plant have been designed and built with great care, strict attention being paid to fundamental idea that the plant should be modern and efficient, and the town a good place to live in. Both these objects have been accomplished.

As has been said the colliery is situated about 8 miles south of Nanaimo. A more beautiful industrial townsite could hardly be found anywhere. The area set apart for a residence district comprises about 80 acres of bench land overlooking the Nanaimo River to the north, and Haslam

Creek to the south. It is sheltered by forested ridges to the east and west which are being preserved as a park. In the background can be seen Mount Buttle, Tyee and other mountains.

The townsite was carefully planned to present a pleasing appearance. The streets are boulevarded and the houses surrounded by fresh green lawns and flower gardens. Shade trees have been planted along the boulevards on each street, and the streets named after the particular tree planted on that thoroughfare such as hawthorne, maple, etc. The town is furnished with a modern sewerage disposal plant and also with an up-to-date water works system.

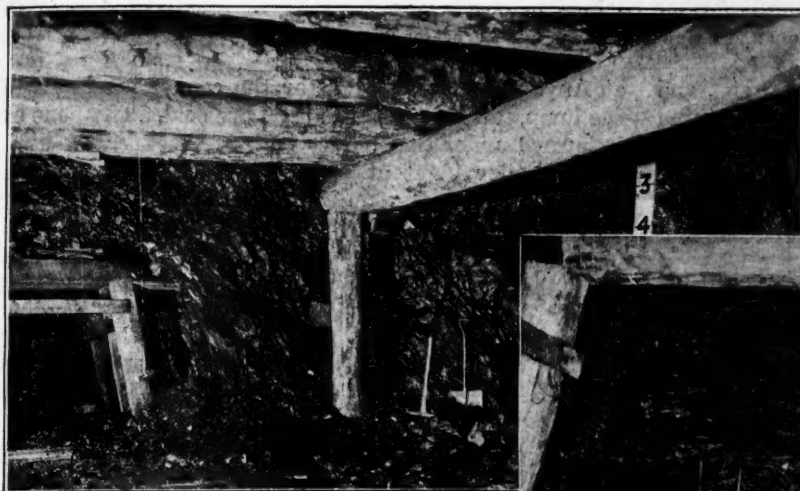
The colliery is provided with one of the finest athletic parks in the country. There is a baseball diamond, football ground, tennis courts, bowling green and a quarter mile track. The athletic field is so large that a baseball and football game can both be played at the same time without interference and the entire field is as level as a billiard table. The hillside back of the athletic field forms a natural grand stand, and the company has reserved this as well as the timber on the other side of the town as a natural park.

The school is to be erected close to the athletic field and playground equipment installed so that the children

will be enabled to enjoy all the advantages of the facilities provided for clean healthy sport.

A striking feature of the company's plans in laying down ideal conditions under which the men may work is the program of entertainment and physical and mental relaxation provided. A temporary recreation hall has been built with gymnasium, dance hall, library, reading room, billiard and pool room, thus furnishing a suitable place for wrestling, boxing and every other means of amusement and recreation that it is possible to give the men.

The town is within a short distance of bathing beaches, in a first-class game country where pheasants, grouse, deer, wild duck and other game are plentiful.



INTERSECTION OF RETURN AIRWAYS AT CASSIDY, B. C.

It is also within a few hundred feet of the best fishing waters on Vancouver Island.

The homes are neat and commodious, the architecture varied and each house is equipped with every modern convenience. The streets are lined with shade trees and lighted with electric lights.

The rooming house for the accommodation of single employees is a gunite structure built in the form of a double L. It contains about 80 rooms all of which open to the outside veranda or balcony. The rooms are steam heated, electrically lighted and each is provided with running hot and cold water. The floor is a patent material, "Raccolith," and the rooms can be washed out with a hose when necessary. On the verandas and balconies are window boxes for flowers. The company supplies the furniture and bedding as a precaution to insure cleanliness and comfort of employees.

The mess house or dining room is a gunite structure and is equipped with every modern convenience. The men enter the building through a lobby equipped with wash basins and running hot and cold water so that they may enjoy a refreshing wash, hang up their hats and then proceed through a pretty, vine-covered pergola to the dining hall. At the entrance to the dining room a drinking fountain is provided where a stream of clear cold water is constantly available. The dining hall is bright and comfortable, cool in summer and steam heated in winter. Each table accommodates six men. No enamel dishes are used.

The kitchen is equipped with every labor saving and modern device—electric dishwashing machine, vegetable

paring machine, tables heated by steam coils to keep dishes hot, large bake oven and refrigeration plant. Living accommodation is provided up stairs for the help.

In order that there may be no waste, the scraps from the mess house are fed to pigs. A vegetable garden will furnish all vegetables for the mess house.

The change house is in charge of Mr. Bond, an old British campaigner and experienced first-aid man. Here the miners can turn in their working clothes, if they are wet, and have them placed in the drying room by the attendant so that they will be perfectly dry and comfortable when they are ready to go to work in the morning. The change house is equipped with steel lockers (which are heated with steam coils from underneath), shower baths and large lavatories. The building is clean and well lighted and there is not a cockroach to be found anywhere.

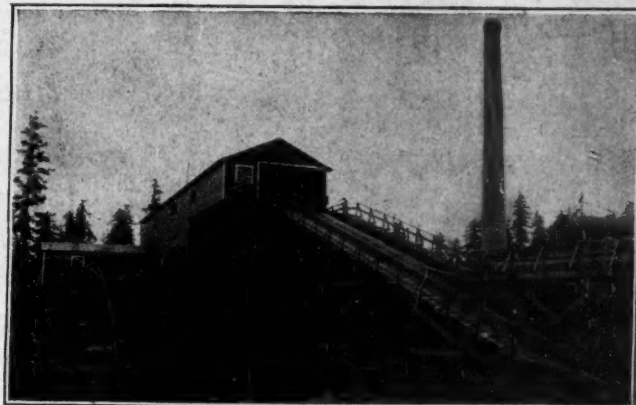
A modern temporary hospital and first-aid station has been established in one of

MAIN HOISTING SLOPE—385 FT. DEEP AT GRANBY COLLIERY NO. 1

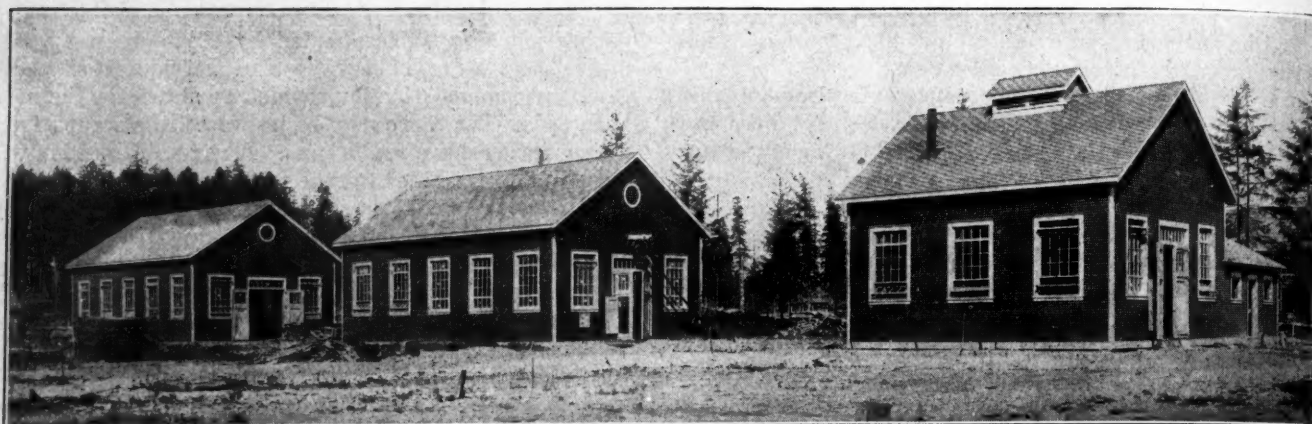


the larger houses until the permanent hospital can be constructed. This hospital is in charge of a skilled matron and trained nurse.

Between the change house and the manway portal are the powder house in which the stock of explosives is limited to one day's supply, the larger magazine being on the opposite side of a hill from the town, the time-keeper's office, lamp house and mine-rescue station. The lamp house is equipped with 300 Edison storage battery electric lamps. The mine-rescue station is supplied with



TIPPLE AND CAR HAUL AT THE PLANT



WORK SHOPS AT THE PLANT
From left to right: Blacksmith, Machine and Carpenter Shops

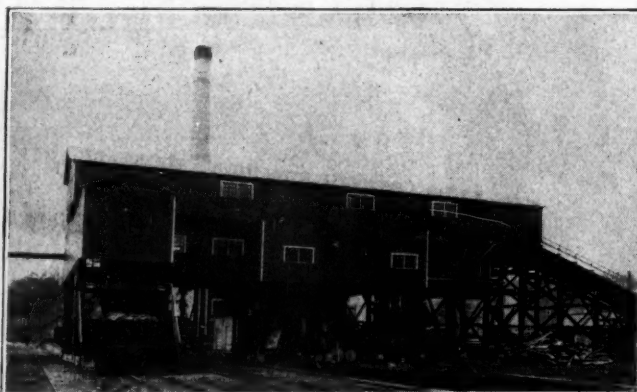
Gibbs apparatus, a lungmotor, smoke chamber, etc., and a large lecture room for holding first-aid or mining classes. These buildings are all heated with exhaust steam from the power house. The tippie is equipped with Fairbanks scale, rotary dump, Marcus screen and the necessary loading booms. The railroad cars are handled with Fairmont car retarders. The track scale is a Fairbanks standard, all steel and concrete, with a capacity of 100 tons. The rock cars are handled by a special Wilson rotary dump.

The washery is equipped with 2 two-compartment jigs having a capacity of 40 tons per hour each. The tippie and washery were designed by Roberts & Schaefer of Chicago. The washery is equipped with sludge recovery and uses the same water over and over again.

The washed slack is used in the new byproduct plant

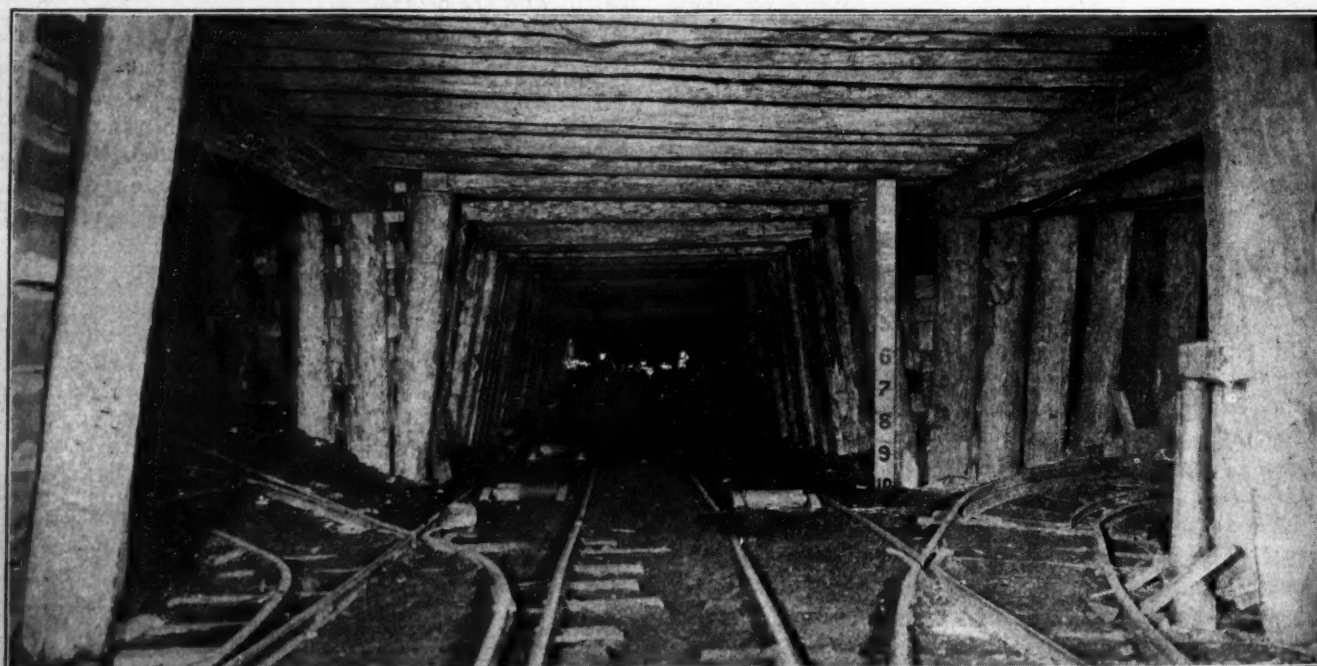
at Anyox in making coke for the copper smelter while the lump, nut and some pea coal are sold. The bone coal is burned under the colliery boilers.

The boiler plant at present consists of two Badenhäusen water tube boilers of 260 hp. each fired by mechanical stokers. The ashes are removed by washing and fluming to the dump. The feedwater is heated by a Webster feedwater heater and forced draft is used. The brick stack is 8 ft. in diameter and 125 ft. high. The boilers and steam pipes are all insulated with asbestos and magnesia to prevent loss of heat. Venturi meters are used to check the quantity of water at the pump station and at the



TIPPLE AT CASSIDY, B. C.

boilers. The compressor is a Rand, cross-compound, condensing machine with a capacity of 2,000 cu.ft. of air per minute. The air is used for running the underground drills, pumps and hoists.

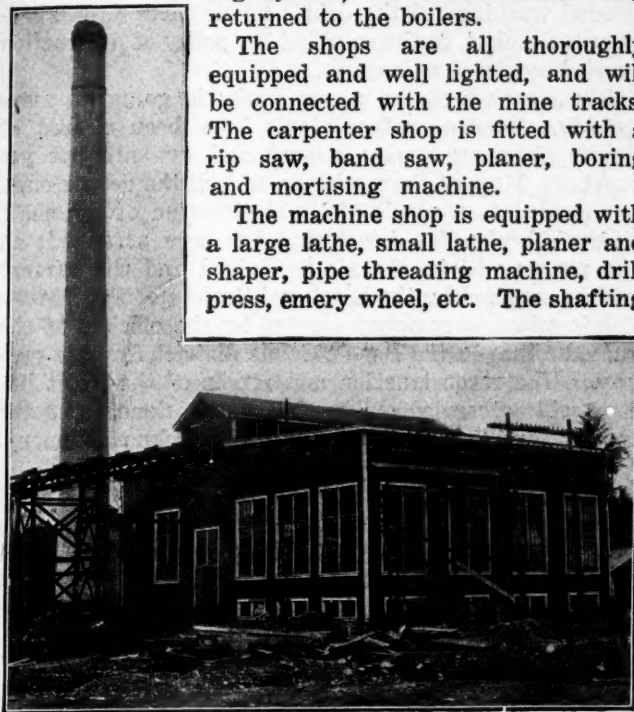


MAIN HOISTING SLOPE AT ENTRANCE OF GRANBY COLLIERY NO. 1

Electric power is supplied by an Allis-Chalmers 450-kw. generator (2,300-volt, 3-phase, 60-cycle, at 360 r.p.m.) and also an auxiliary unit of 250 kw. capacity (2,300-volt, 3-phase, 60-cycle, at 450 r.p.m.), both direct connected to vertical high speed engines (Goldie & McCollough). The remainder of the electrical equipment is of Westinghouse make. The power house is equipped with the Bower oil-handling system. A Worthington fire pump with a capacity of 1,000 gal. per minute, size 18 x 10 x 12 in., is ever in readiness for an emergency. The entire plant is equipped with an exhaust steam heating system, the condensation being returned to the boilers.

The shops are all thoroughly equipped and well lighted, and will be connected with the mine tracks. The carpenter shop is fitted with a rip saw, band saw, planer, boring and mortising machine.

The machine shop is equipped with a large lathe, small lathe, planer and shaper, pipe threading machine, drill press, emery wheel, etc. The shafting



POWER HOUSE

is all well guarded. The master mechanic's office adjoins the machine shop.

The blacksmith shop is fitted with two forges, a steam hammer and a swing crane. Adjoining the blacksmith shop is a special tool house where miners' picks are kept after sharpening. All scrap iron is sorted out and stored in pockets built for the purpose. Racks are provided for storing iron and steel stock.

The pump station is equipped with two Morris centrifugal pumps each having a capacity of 300 gal. per minute. These pumps elevate the water to the two 50,000 gal. storage tanks situated on top of the hill overlooking the town from whence it flows by gravity through the water mains. The pumps are driven by 50 hp. Westinghouse electric motors. A Venturi meter records the quantity of water leaving the station at all times. The Nanaimo River furnishes a plentiful supply of pure fresh water for domestic and power purposes.

The colliery is equipped with a complete telephone system which connects all surface offices, shops and buildings with the underground workings.



GENERAL OFFICE OF THE GRANBY CONSOLIDATED CO.

The coal bed dips at about 18 deg. and the coal varies in thickness from 5 to 20 ft., averaging about 10 ft. The roof and floor are of shale and subject to rolls. The roof is fairly regular, however, most of the rolls occurring in the floor.

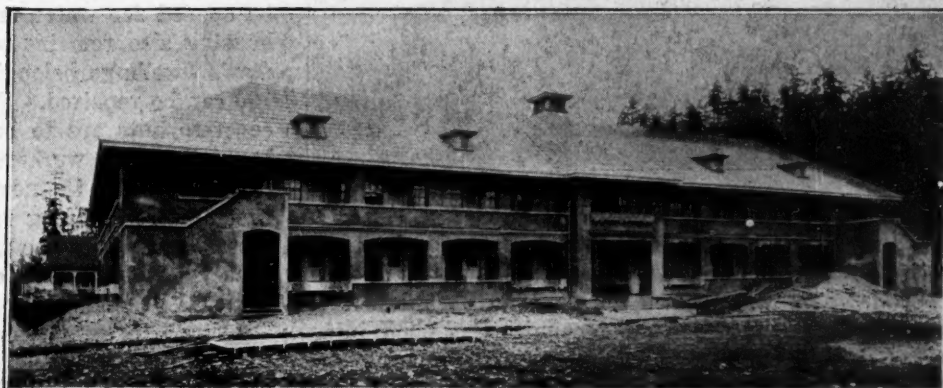
The mine is opened on the dip of the bed, the main slope having been driven to a depth of approximately half a mile. It is being driven 7 x 14 ft. in the clear to allow for double track and is timbered with 12 x 14 in. framed sets spaced 4 ft. centers. A separate manway is provided as a travelling road and employees are not allowed to use the main haulageway in passing to and from their working places. The mine is worked on the pillar and stall system. The operation is divided into relatively small panels as a precaution against mine fires and large pillars are left along all main haulage roads and permanent airways, the idea being to extract a maximum amount of coal at least cost rather than to take out cheap coal for a few years to the final detriment of the mine as has been done in many operations on Vancouver Island and elsewhere.

The mining is planned so as to deliver the coal from the face to the main haulage system by gravity as far as possible. Storage-battery locomotives are used on the levels underground. No horses or mules are employed.

The drainage system has been carefully planned so that surface water entering the mine will drain by gravity and water from workings below the drainage level will run to a central sump.

The mine is ventilated by a Sirocco fan, with a capacity of 150,000 cu.ft. per minute. The operation is provided with a double intake and return airway throughout and the workings are so planned that the air can be taken to the face where required with a minimum of loss.

The fan house is a concrete fireproof structure. It



ROOMING HOUSE AT CASSIDY, B. C.

also house the telephone exchange and motor generator set for charging the storage-battery locomotives. The fan is driven by a 150 hp. Westinghouse electric motor.

The mine cars are built of wood and have a capacity of 1½ tons of coal. The track gage is 26 in. Hadfield



COAL OUTCROP-BANK OF NANAIMO FIELD AT COLLIERY NO. 1 OF GRANBY CO.

manganese steel, self-oiling wheels 18 in. in diameter and with 3 in. tread are used. The mine cars are built in the company shops at the mine and have no end doors.

Cassidy is the conception of F. M. Sylvester, vice president and managing director of the Granby company as to the manner in which a great corporation should provide for the welfare of its employees and his ideas have been carried out in a generous and whole-hearted man-



WASH HOUSE AT CASSIDY, B. C.

ner. It is the ideal, which should make for harmony and good fellowship between the company and the men, and is a long step toward the dawn of that day when employer and employee shall recognize that their interests are one, thereby enabling operations to be conducted to the best advantage of all concerned, capital, labor and the general public.

Repairing the Ruined Mines of Lens

BY MARK MEREDITH
Liverpool, England

ALTHOUGH all possible efforts at reconstruction of the mines of Lens (France) have been, and are being made, there is now no hope that a single ton of coal will be extracted before 1921. Even if the work can be carried on without interruption, which is by no means certain, it will take all 1920 to clear the underground workings of the debris of all sorts with which they are choked, as the result of the policy of destruction carried out by the Germans.

The clearing of the upper works is going on more quickly. Twelve surface plants have been cleared of debris, four are partly cleared and five are not yet touched. Most of the workings, and all the deeper ones, are flooded as a result of the destruction of the shaft lining. A plan for dewatering has been arranged; all the pumps will be electrically driven and the current will be supplied by the Electrical Society of the Pas-de-Calais mines, a company created by the officials of the ruined mines in the Pas-de-Calais district for this purpose. The reconstruction and repair of the shaft linings will be carried out by German workmen, and the cement for the purpose will be brought from Germany.

UPPER WORKS ARE RAPIDLY BEING CLEARED

A number of German experts recently visited the mines in order to make an exact estimate of the damage done. They admitted that the tubing of the 15 principal pits was entirely destroyed. This is scarcely to be wondered at, as the Germans began their methodical destruction of the Lens mines as early as 1915, and did their work thoroughly. The German experts estimated that it would be necessary to remove 130,000 cu.yd. of debris per month in order to have the pitheads relatively clear by the end of 1920. The pumping out of the mines is a far more serious matter and will require at least three years. It is hoped that by next year it will be possible to extract coal from the first galleries, which are only some 650 ft., or even less in depth, but it is not expected that the water will be entirely removed from the lower workings, which run down to about 2,300 ft., until 1923 or possibly 1924.

TRANSPORT CRISIS IS A SERIOUS DIFFICULTY

The transport crisis is also a serious difficulty in the way of reconstruction. The railways in the Lens district will not be completely repaired before 1921, although it is hoped that the quay at Pont-a-Vendin will be opened for water transport soon. The question of housing also remains to be solved. Of the 800 workmen's dwellings belonging to the Miner's Society, not 100 can be repaired. For the Lens mining district 400 concrete huts are to be built in which it is hoped to house the 5,000 workers who will be employed in clearing the pits for the next two or three years. Although every effort is being made to bring back to Lens its former prosperity the task is so immense that it is not expected that the town and its mines will return to anything like their former state before 1928 or 1929.

At the present time France is facing a severe coal shortage. Until recently the embargo which was effective in the United States cut off that source of supply. But this embargo has lately been lifted.

Mine Inspection as It Affects Output

BY M. S. BEDDOW
Scranton, Pa.

Since the cost of a breakdown of almost any electrical equipment used in a mine is by no means measurable by the cost of the repair parts it behooves every mine electrician to prevent such failures by every means possible. One of the most effective means of securing this end is the making of conscientious and thorough inspection of electrical equipment at frequent intervals.

THERE is an old saying that an ounce of prevention is worth a pound of cure. Nowhere is this more truly applicable than in the electrical apparatus applied to coal mining. So dependent has the mining and preparation of coal become upon electricity that prevention rather than cure must be the order of the day. Times without number the electrical equipment used in connection with the extraction of coal is allowed to go out of commission, solely because the operator who guides its destinies forgets, or neglects, to do some little thing which he knows should be done. Then comes the breakdown with its consequent loss of coal and piling up of upkeep cost.

This neglect if persisted in soon becomes a vicious circle widening and ever widening into an orgy of breakdown which seemingly has no ending. Of course this condition cannot prevail if the efforts of all concerned are directed into the one central channel of prevention. Prevention, by actual test, is the one sure way of keeping the rolling stock on the move to and from the faces of the chambers.

The way to put a system of this kind into actual practice seems so easy and plausible on the face of it that one wonders just why it has not become universally prevalent long before this. It needs, and must have, the undivided co-operation of all concerned in the mining of coal. It is an immediate, vital problem, and must not be confused with lesser ones which are taking up the time of many officials and employees. The hub about which it revolves is contained in just two words—periodic inspection. And this must be an honest inspection for there are inspections of so cursory a nature that they might better not have been made. These are mere shams.

AFTER LONG RUNS LOCOMOTIVES SHOULD BE INSPECTED

After ten and twelve hours of the severest kind of work an electric locomotive, taking this machine as an instance, is so hot in most of its operating parts that there are likely to be a hundred-and-one little things just on the verge of giving trouble. Right then is the time to make a careful inspection with a view to catching these weak spots and preventing the mischief that would surely develop at the beginning of the next workday. This may seem to be of minor importance at the time, but there is no knowing to

what lengths they would reach if they are not check-mated at the proper time.

A weak spring in a brush-holder, although of small moment in itself, and easily replaced, has been known to cause the burn-out of an armature and its field coils and run up a bill of expense not covered this side of several hundred dollars. And not the least important part of this stop was the forfeiture of from 50 to 60 cars of coal with its consequent loss of wages to miners, laborers and others in the section of the mines effected. Thus what would originally have taken a half hour of a motorman or electrician's time was allowed, through neglect, to drag over a period of 10 or 12 hours bringing in its train delay and expense that would be hard to measure accurately in dollars and cents. And the original effect of all this, if those directly responsible are permitted to go uncensured, is to make all hands still more careless and there soon will be other stops. The solution, then, would certainly seem to be periodic inspections rigidly adhered to by electrician and motorman.

MAKE HONEST INSPECTIONS ON TIME

The logical man to see that these inspections are made on time, and made honestly would seem to be the colliery electrician, for after all he is responsible for seeing that the equipment is kept in service. It does not matter materially that a particular electrician is able to get a locomotive, hoist, pump, coal-cutter or what not into service again after a stop. Most electricians are able to do this in a shorter or longer period of time dependant upon their respective abilities. The big problem is to keep going. Make your break-downs few and far between and of a minor character. Keep your equipment in such shape that there will be no stops and great will be your reward. It is much easier than you think and requires only honest endeavor coupled with a determination to give of your best. And these attributes are inherent in every one of us.

I have come into direct contact with hundreds of mine electricians in the last 16 years; as a class they are well worth studying. Invariably they are honest and want to "make good" in their chosen profession. Point out the proper path to follow in order to keep things moving and nine out of ten of these men will do their level best to meet you more

than half way. And that is why I want to repeat here what I said previously, and I desire to lay special emphasis upon it: It is easy to put this "practice of prevention" into execution because you have these men to work with you and carry out your wishes in the matter. And with this kind of help, working as a team, your breakdowns will be less and less frequent.

But, the question may be raised, is not this only a part of their regular work? Why repeat something known to be a truism?

Periodic inspection is unquestionably a part of their work, but make them understand it is part of your work, too, and just as soon as they learn that you are interested in what they are doing just so soon will their efforts be redoubled, and you will reap the reward in the shape of less breakdowns and of course, increased output.

Twenty years or more ago when mine locomotives were unknown in the anthracite fields mule haulage was the type of transportation in vogue. This answered the purpose well until the veins became smaller and the hauls longer. The work that a team of mules could do was naturally limited, and when one of them was put out of commission because of some accident, the loss in output was infinitesimal when compared to the total tonnage. This of course arose from the fact that there were several hundred mules in the one operation.

As time went on these mules were gradually supplanted by the electric locomotive, two or three of the latter doing the work that had been performed by several of the animals in question. Naturally, then, when a locomotive goes out of commission today the loss in coal is enormous, and there is a combined effort on the part of all concerned to repair the damage wrought so that the locomotive can again be put on the road.

Now if one twentieth part of the energy feverishly expended at such times had been previously employed in prevention the wheels of output would have rolled merrily along without this aggravating stop, and the dispositions of all concerned would have remained much sweeter as a natural consequence. Hard words are often said at such time, too, that would never have been given utterance to had there been no stop, for the tempers of superintendents, foreman, driver-bosses, etc., are beyond understanding when the coal is not moving toward the foot of the shaft. It is truly the end of a perfect day when there are no stops to curtail the output of a coal mine.

PREVENT BREAKDOWNS BY MINOR INSPECTIONS

This question of prevention brings with it still another thought that might stand discussion. This takes into consideration again using the mine locomotives as an example, whether or not the apparatus is operating in normal fashion. To better make this plain I will say that I recently came upon a locomotive which had been giving a great deal of controller trouble. Upon investigation it was found that someone had connected up the blow-out coils so that they opposed each other. The result was that the arcing from the fingers when the controller was thrown to the off position was not smothered, and this fire held over a sufficient length of time to destroy fingers and segments. Several times the whole inside of the controller had to be renewed. It of course took several hours to set things right each time.

This same mistake has been made with reference to motor field coils, also, and in this case, if it is not discovered soon, the result will be a burned-out armature together with its fields. Thus it behooves us to not only be careful in our periodic inspections but to be equally careful in our installation work as well. It is evident, then, that the more careful one is when installing electrical equipment the less will one find out of order when the inspection is made.

Keeping these two facts ever in mind, will mean that the whole organization will be keyed up to a higher point of efficiency. This must of necessity result in an increased yield, for electrical deterioration finds its most severe expression in loss of coal.

LESS BREAKDOWNS WITH MODERN LOCOMOTIVES

Recent years have seen many changes in connection with mine locomotives. Each of these has made the work of the electrician a little easier, of course, and the equipment more efficient as a whole. Less breakdowns have been experienced, also, for the reason that as each of these improvements was incorporated in the general make-up of the machine, it was more able to withstand the heavy shocks and stresses forced upon it by a too-energetic motorman all too willing to make it do in five or six hours the work it should be given eight hours to perform. Not the least important of these changes was the ball bearing on the armature shaft which has nearly put the old sleeve type of bearing out of business.

Probably one thing which the electricians of the old school hated most to see happen was an armature dragging on the poles because of worn babbitt in the bearings. This was bound to happen now and again and probably has occurred to every electrician at some time in his career. Nevertheless it is something that no electrician is proud of and does his utmost to avoid, for while the blame may not be directly traceable to him he must feel that it is a reflection upon his capability just the same.

LOCOMOTIVE BEARINGS REQUIRE CAREFUL ATTENTION

However since the ball bearing largely has taken the place of the older type of journal, armatures are found on the poles extremely seldom. It must not be supposed however that inspection is not needed even with these most efficient of all bearings for mine locomotives. They will go dry, too, just as easily as the old sleeve type, but, thanks to their greater durability, the damage wrought is not nearly so disastrous. In order to get the most out of these bearings they must not only be inspected periodically but must be washed out with kerosene oil every two or three months. This will remove foreign substances and any acids that might tend to destroy the bearings themselves.

Another detail of construction that has kept locomotives from breaking down under the hard usage of recent years is the fact that they are now over-motored instead of being under-motored as was the case up to about ten years ago. Time was, and not long ago, when it was thought by designing engineers that about 6 hp. per ton was sufficient for all practical purposes. How far they were wrong was evidenced by the locomotives that are being turned out at the present time. Ten horsepower per ton seems to be the acceptable rating now, and this does not seem to be in the least too much. It was an easy matter to overload a loco-

tive with the old rating since because of the too heavy weight on the drivers, it was not possible to develop sufficient torque to turn the drivers and thus allow the armatures to turn sufficiently fast to generate the counter electromotive force which would hold the current taken from the line at a point where it could do no harm. Frequently the load was so great that wheels could not move at all and armature and fields for the time formed a direct path to the ground. The current taken and the heat developed at such times is enormous, and there is no wonder that as the coils were taken from the burned out armature the insulation fell from them like water from the proverbial duck's back.

A motor that cannot develop sufficient horse-power to turn the wheels when the load becomes excessive can be expected to give trouble, and burn-outs of armatures, fields, resistance, controllers and other electrical parts must be looked forward to as a natural result. Motors in modern locomotives are of sufficient horse-power to move a load whose draw-bar-pull does not exceed 20 per cent of the locomotive's own weight when the machine is equipped with cast iron wheels, or 25 per cent when steel wheels are used. Thus a locomotive properly motored and weighing seven tons (14,000 lb.) will pull a load whose resistance does not exceed 2,800 lb. This, of course, assumes that the locomotive is equipped

with cast iron wheels. For steel wheels coefficient of friction of which is greater, a load whose resistance does not exceed 3,500 lb can be pulled.

Loads in excess of the above are an evil and should be shunned as such. Prevention here would consist in knowing the grades over which trips must be handled, and then placing a limit on the number of cars that should be hauled on these grades, for while the drivers might be turning regardless of the grade or load, and the horse-power developed might be much below what the motors are capable of giving, continued efforts to surmount a nasty hill after repeated failures does not do the equipment a bit of good, and are doubtless the main contributing causes for many of the stops, the reasons for which cannot be explained satisfactorily.

Summing up, then, it might not be amiss to state that the plan as set forth in this article has been tried out with quite happy results. Breakdowns were so infrequent as to make their occurrence a matter of surprise rather than of expectancy. It is gratifying, at least, to the fellow who is responsible for upkeep to see week after week go by without the customary call for help from the operators of the equipment, and the time thus saved can be put to good advantage in repairing feed lines, signals, telephones and other parts of the system which have a habit of kicking up a fuss when least expected.

Lengthening the Life of Track Rollers

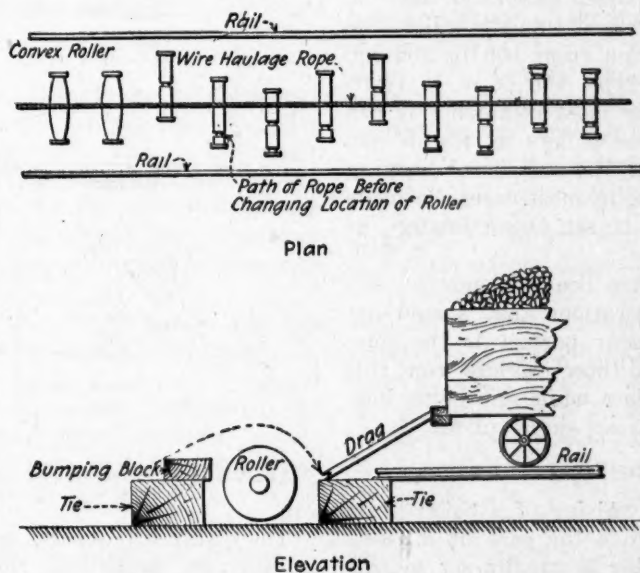
BY R. Z. VIRGIN
Pittsburgh, Pa.

WHERE rope haulage is employed, whether on inclined planes, slopes, or level roads, track rollers, either of metal or wood, are necessary. In the majority of cases, however, wood is employed for this purpose. Track rollers are necessary because they reduce friction and thus save power, which is desirable at all times. They lengthen the life of the ropes by preventing them from dragging on the ground, and they save the ties by holding the rope off of them and thus keeping it from sawing the ties in two, thus weakening the tracks and causing wrecks. Track rollers should be placed at such intervals as to prevent the rope from dragging on the ties. They should be of generous diameter since their life is in general proportional to the diameter and a thick roller is stronger and does not revolve as fast as one of small diameter. Ordinarily, track rollers are suspended and revolve upon gudgeons or spindles, which should be from $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. in diameter, depending upon the size of the roller. In many instances, they can be made from ends or short pieces of pipe.

The usual diameters of wooden rollers vary from 4

to 9 in., depending upon the size of the car wheels. The larger the diameter of the car wheel, the larger may be the diameter of the track roller employed. Wooden track rollers, like all other mine supplies, have increased in price within the past few years. At

the present time such rollers cost about three times their former price, so that attention must be paid to the roller's efficiency and life, and each roller should be so placed as to secure its maximum service before it is necessary to discard it. Fig. 1 shows a method of placing rollers so as to secure this maximum service. The practice of placing all rollers in a straight line upon an inclined plane slope or haulageway looks orderly but permits only about one-third, or even less, of the maximum life or service of the roller to be secured. Many foremen are instructed to place rollers



MAXIMUM SERVICE IS SECURED BY THIS ARRANGEMENT

in alignment, but where this method is followed, the cost of operation and maintenance of rollers should not be charged in its entirety to equipment or repairs, but to inefficiency of management.

If rollers are placed as shown in Fig. 1, they may be turned end for end in their bearings and twice as much

service secured by this reversal. They may then a third time be placed in brackets where the rope will bear on the roller in the center. This secures three times the service available for one setting of the roller only.

If rollers are used on an incline, those near the drum should be turned up with a convex face; that is, they should be larger in the center than at the ends. This will allow the rope to travel from one end of the roller to the other as the rope changes location by its winding upon the drum. This shape of roller is shown near the end of the drawing.

Where trucks are hauled with considerable speed up an incline, and where cars are heavy, drags or dogs are often hung on the rear of the truck to prevent the cars, should the trip be broken, from running backward down the slope. These drags or dogs are often of considerable weight but are required by law in certain states.

Every mining man knows the effect of such a drag pounding along the track and bouncing onto and off of the ground and onto the roller, and either bending or breaking the grudgeon, either of which will affect

or probably ruin the free movement of the roller.

Fig. 1 shows a bumping block of suitable size nailed or bolted to the tie immediately in front of the roller. This block is so proportioned and placed as to take the blow of the drag. It thereby protects the roller and is sufficiently strong to resist a considerable blow, one which delivered upon an unprotected roller would probably bend its spindle.

If a bumping block similar to the one shown is placed on the tie in such a manner as to extend out over its edge, as shown in the drawing, it will greatly assist in preventing large pieces of coal or rock from choking the roller and thereby obstructing its free rotation, since by this method if a piece of coal passes the bumping block it has a considerable space to fall into and thus prevent its wedging.

Whatever type of roller brackets are employed, they should be reinforced either in the roller groove or on the side with a piece of iron. This will prevent the roller from cutting into the bracket and thereby secures greater life to the roller support. Discarded or broken car ribs make excellent reinforcement for this purpose.

Resetting Return Tubular Boilers

BY C. R. WEIHE
Star Junction, Pa.

PROBABLY no industry gives as little thought to the fuel wasted in the boiler room as does that of coal production. Nevertheless, if this waste were actually realized there is no doubt but strenuous attempts would be made to reduce it. It is not the purpose of this article to discourse on the willful waste that exists at some coal mines but to offer a means by which some of this waste may be reduced.

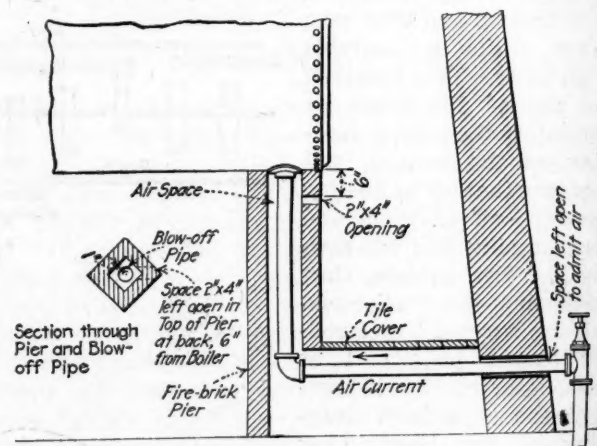
The most common type of steam generator used at American coal mines is the return tubular boiler, the nominal ratings of which range from 100 to 200 hp. Of the older boilers of this type, the 66-in. x 16-ft. and the 72-in. x 18-ft. are the most common. It has been my experience that these boilers as a rule are set too close to the grade for the successful burning of bituminous coal. They can, in most cases, be made to give much better results if set approximately as shown.

When attempting to increase the efficiency of any boiler plant, the main considerations that should not be lost sight of are: How near perfect is the combustion in the fire box and how rapidly can this combustion be made to take place while still being kept nearly perfect, that is, without an excess of air.

EXAMPLES OF RAISING BOILER SHEET

As an example of what the raising of a boiler sheet above the grate may mean, take the case of a 66-in. boiler. Such a steam generator is usually set so that there is from 20 to 26 in. between the grate to the boiler shell. The volatile hydrocarbons that rise from a fuel bed 6 to 8 in. in the thickness will not be properly mixed with air before they come in contact with the relatively cold boiler sheet, and, since it takes a temperature of from 1,800 to 2,000 deg. F. to burn these gases or cause the atoms of carbon to combine with those of oxygen supplied with the air, the fire

produced in such a setting more strongly resembles a smudge than a real fire for producing steam. Such conditions as these actually obtain in many cases where return tubular boilers are employed. This may be obviated, however, at least as far as the smudge is concerned, by admitting a surplus of air into the firebox. This, however, does not improve the efficiency. Although it may make some steam, it is highly wasteful of fuel.



ABOVE METHOD GIVES EXCELLENT SATISFACTION

The distance from the bridge wall to the boiler shell is also an important consideration, and, in many instances, this is not made sufficient. If the heating of the boiler had to be all accomplished at the shell above the bridge wall, and nowhere else, the theory of a close bridge wall would be correct. One important consideration that must be continually borne in mind and carefully watched where the distance between the bridge wall and boiler is large is the admission of air above the grate. This air tends to stratify and if its velocity is

fairly rapid it will pass next to the boiler and tend to keep the boiler shell temperature down. This is not generally the case where the bridge wall is close to the boiler shell, since the gases are forced to intermix to a certain extent, thus raising their minimum temperature.

By raising the boilers higher above the grate, the combustion chamber is made larger. This is beneficial, since it affords greater room for the ashes carried over the bridge wall. The greatest gain is not, however, the space it affords for these ashes, but arises from the increase in cross-section of this chamber, so that the gases decrease their velocity and have an opportunity to thoroughly mix and burn completely before their journey through the tubes. If the combustion of gases is not complete before they reach the tubes it will never be complete, since in these tubes their temperature will be lowered to such a point that combustion cannot take place.

A lack of excess air increases furnace and combustion chamber temperatures. This is, of course, not a detriment, but provision must be made therefor. One particular detail of construction in a horizontal return tubular boiler is the blowoff pipe, which, in this type of steam generator, must necessarily pass through the combustion chamber. In Fig. 1 is shown a method that has given excellent satisfaction. As here shown, the blowoff pipe is inclosed in a firebrick pier and trench. The pier is built up with a good grade of firebrick laid in fire clay or loam. The space surrounding the pipe has a minimum of about one inch from pipe to brick.

Approximately 6 in. from the boiler shell an opening of about 2 x 4 in. is left in the pier so that air will be drawn into the combustion chamber by the draft. Care should be taken that this opening be not closer than shown in the drawing, since there is a blow pipe effect at this point where combustion is nearly complete and where the draft is strong. The trench inclosing the horizontal portion of the blowoff pipe is also constructed of firebrick laid up in loam or fire clay with a space left between the brick and the pipe. The trench is covered with tile and plastered up tight.

PURPOSES OF AN INCASING PIPE

Where the blowoff passes through the rear wall of the boiler setting, it is inclosed in a piece of pipe several sizes larger than the blowoff. This is built into the setting permanently. This incasing pipe serves two purposes: It admits air to the pier and a new blowoff pipe can be passed through it and installed without its being necessary to remove any of the setting bricks.

It is advisable to use double-strength pipe for the boiler blowoff, even when protected in this manner. In any case, the elbow and other fittings should be double strength or extra heavy malleable iron. Although the pier and trench above described afford excellent protection for the blowoff, it should nevertheless be examined every time the boiler is taken off the line to be cleaned or washed.

When raising and resetting or when the setting of any return tubular boiler is rebuilt, it is well to place the rear of the boiler 2 or 3 in. lower than the front or firebox end. This greatly aids in washing out the boiler if it is made with more than two sheets. It also helps the circulation of the water.

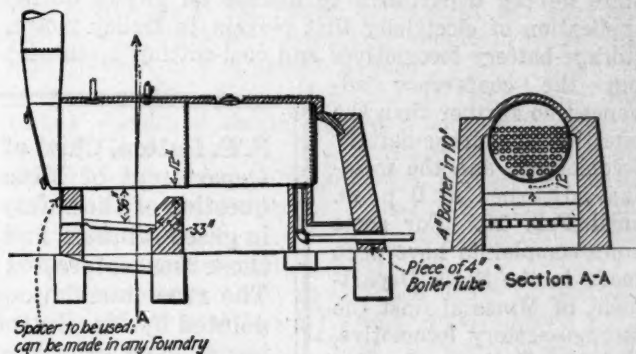
Care should be taken when boilers must be forced that they be thoroughly clean and that the circulation of water is good. If the boiler is kept clean and the

water level is carefully watched, a boiler even when driven far above rating will not require any more upkeep than some that are operated under present conditions.

When rebuilding a return tubular boiler setting, between 60 and 70 per cent of the old brick can be used again if the original setting was laid up in lime mortar. It would not be advisable to re-employ the old firebrick in the new firebox, but they may, however, be used in the combustion chamber to advantage.

MATERIAL FOR RESETTING TUBULAR BOILER

The rebuilding of a setting for a 66-in. x 16-ft. return tubular boiler requires about 28,500 to 30,000 bricks. The walls should be battered about 4 in. in 10 ft.



BETTER RESULTS ARE OBTAINED BY THIS ARRANGEMENT

and the grate should be approximately 2 in. lower at the back than at the front.

When contemplating raising a boiler, it should be remembered that the mere fact that the boiler is raised will not attain the desired results unless the distance between the boiler and grate is increased. When this is done a spacer must be provided to fill in the front equal in width to a little less than the amount the boiler is raised. It has been found advantageous in some instances to arrange the front of the boiler as shown in Fig. 1. In this case the fireman is given about 1 ft. more floor space, and should the front man-head leak, the water will not run down the arch inside the setting and cause it to disintegrate.

Shot Firing

OF ALL the archaic, moss-grown, semi-modern so-called safety ideas, that of employing shot firers is probably one of the most harmful and dangerous. This practice is an open acknowledgment that a dangerous condition exists. It attempts merely to smooth over a real peril. Frequently it actually increases the danger since it releases in a very short interval of time the quantity of gas that would ordinarily be released in 24 hours. It is woefully inefficient.

Probably one of the most telling arguments against the shot-firing system is that with increase of real safety departments, mine after mine is abolishing it. This does not apply where the safety department is composed of porch lizards. But take one of your sure-enough, honest-to-goodness safety men and he'll turn up-side-down any shot-firing system yet contrived. Away, then, with the present shot-firing systems and their attendant danger and waste of time and labor.

Spend just half as much money in real ventilation and make the mine really safe.

Use of Electricity in Pennsylvania Coal Mines Discussed

STATE and Federal mining officials, coal operators, miners and manufacturers of electrical equipment held a session on Jan. 27, at the Capitol in Harrisburg, Pa., and discussed new rules and regulations to govern the use of electricity in the coal mines of Pennsylvania. The State Chief of Mines, S. E. Button, presided at the meeting, and it was the intention of the state mining department to discuss all phases of the application of electricity that pertain to trolley motor, storage-battery locomotives and coal-cutting machines; but the conference advanced no farther than the question of storage-battery locomotives, and the meeting adjourned at 9 p. m. until Feb. 10. For some time complaints have been made to the State Department of Mines against the storage-battery locomotive, and Mr. Button ordered a commission to make an investigation of these motors, calling the conference for the purpose of hearing suggestions that might improve present conditions.

The mine inspectors of the bituminous region believe that the storage-battery locomotives as now constructed, are unsafe in gaseous mines, and, are of the opinion that the motors do not comply with the requirements of the bituminous mine law; therefore they should be restricted to areas where there is little likelihood of their encountering inflammable gas.

It is contended that these locomotives produce sparks and flashes in regular operation. The controller and motors will, when operated, ignite gas due to the flashes consequent upon the breaking of electrical current. Other parts of the storage-battery equipment may produce sparks or flashes, the inspectors claim, in the course of their regular operation or as the result of accident. The locomotives are able to go to any part of a mine where there is a track, making it quite difficult to place any limit on the activities of such equipment.

The committee of mine inspectors and the department electrical engineer, Charles M. Means, went into the question quite thoroughly, and have made certain recommendations to the Department of Mines.

The inspectors, for the purpose of their report, have considered the various parts of a storage battery locomotive liable to cause ignition of gas and have divided them into three classifications as follows:

"Class 1: Includes all parts that may produce sparks or flashes as a result of normal operation of the locomotive. In this list the following parts are included, which list may be extended when new features are incorporated: Motors; resistances; controllers; fuses and switches used in regular operation.

"All the parts above enumerated should be enclosed in explosion-proof cases, as defined by the act of June

9, 1911. These cases should be designed to withstand, without rupture, the maximum pressure that can develop as the result of an ignition of the most explosive mixture of methane and air when the case is entirely filled with such a mixture.

"All flanges between parts of the casing should be so arranged that no flames will pass between the flanges without being cooled to a temperature below the ignition point of gas. All bolt or stud holes should be so made that in case a bolt or stud is left out, there

will be no hole from the inside of the casing to the outside. "Class 2 includes such parts as may produce sparks or flashes when operated but which need not be used in regular operation. In this class we have change-over-switches and charging receptacles in case their terminals are 'live' during normal operation. These parts may be placed in a locked box and only

operated in the charging station.

"Class 3 includes all parts which do not produce sparks or flashes as a result of normal operation but may do so as a result of accident. This class includes: Battery; battery enclosures; wiring; battery connections; headlights and instruments.

"A battery of good design, fitted with proper terminals and connections, does not seem to offer any hazard if it is properly protected from mechanical injury. The design of the connections is well standardized for the various batteries and the connections are not likely to become loose if a proper amount of care in maintenance is used.

"Unless the battery cells are insulated from the trays in an approved manner, the battery trays shall be insulated from the battery box with porcelain or equivalent insulators of adequate dimensions.

"The headlight should be constructed of a metallic case and fitted with a heavy glass lens which should be protected, in so far as possible, by the casing. This headlight should be of explosion-proof construction, unless some circuit-breaking device is used that will automatically and safely open the circuit in case of accident. The headlight should be so located on the locomotive, or protected, that it will be least exposed to damage from accident.

"The wiring should be in iron conduit or its equivalent. In general, the battery connections and wiring can be so constructed that with a proper degree of attendance there is no likelihood of a spark or flash being produced.

"The matter of charging, while in a manner foreign to this investigation, does have a direct bearing on the problem. It is quite important that all charging stations be ventilated with fresh air which must be carried to the return after passing through the charging

S. E. Button, Chief of the Pennsylvania State Department of Mines, has investigated the question of the safety of electrical equipment in gaseous mines, and recently called together those most interested to discuss the situation. The recommendations of a commission, appointed by Mr. Button, reported to the meeting at Harrisburg and a brief review of the suggestions made are noted in this article.

room. This room must be treated as a highly-dangerous locality, due to the liberation of hydrogen by the batteries during charging.

"The room must be of fireproof construction throughout and all wood or other combustible material entirely eliminated. No inflammable material shall be stored or allowed in this room. If doors are used, they should be of steel and sufficient openings provided to allow a free circulation of air at all times. This reference to the charging station is suggested by the fact that these rooms have been a prolific source of trouble and represent a hazard that cannot be ignored."

The manufacturers' representatives stated that they were willing to make any changes in their locomotives to comply with the law and do anything to save human life, but were anxious to know if, after spending time and money to produce what they would consider a perfect machine, the State Department of Mines would accept it and allow it to be used. They also contended that to build a machine as required by the State Department of Mines and to meet the requirements of Schedule 15 of the Federal Bureau of Mines, would make quite a costly motor, and that the operators would then probably refuse to put so much money into storage-battery locomotives. Chief Button, of the state mining department, does not deem it advisable to establish fixed standards that might in any way handicap the future development of this class of equipment, but impressed it upon the conference that he would insist that these motors be made safe or the Department of Mines would refuse to allow them to be used in gaseous mines until they are made safe.

Great Britain Looked Ahead

WHEN THE WAR ended the people of the United States, with a genius for self-depreciation, at least, as obvious as their tendency toward self praise, declared that Great Britain had a definite after-war policy, whereas the United States was floundering around without any plan. Everybody admitted we had no definite program. Great Britain had everything plotted and prepared. As usual it looked bad for us. How could we get along without diagram or charted course?

Perhaps it is true that the British were not so clear as to the direction in which to tread as our traveling journalists tried to indicate. Perhaps also there were jarring interests in the United Kingdom as there were here. In fact, it appears that there were. It would be strange, indeed, in that realm of individualists if every one thought the same and traveled in the same direction.

Still the Government did have some sort of plan of control that it hoped would rule and that it trusted would succeed. Advocates of Government control were more numerous than here. The British have during the war at least been a few laps ahead of us in socialism. There is just now a profounder belief in government ownership in Great Britain than in the United States and a greater deference to governmental authority.

What has been the result of British foresightedness? Nothing but disappointment. The mines under government restrictions have proved less fruitful than ever. The output of British collieries has fallen from 5,500,000 tons per week in 1913 to between 2,500,000 tons and 4,750,000 tons per week in the past year. British coal no longer dominates foreign markets.

The payment to the unemployed has made idleness satisfactory if not profitable. Exchange has fallen from \$4.87 to \$3.50 and lower. Prices have risen more than wages. All this has partly arisen from causes which have inevitably ruled the situation, but more perhaps from a bad practice of looking ahead at the goal instead of making strides to reach it and taking the obstacles as they arise.

Meantime we, who did not look ahead, have found conditions far better, and the difference has largely been that we were on the whole less hampered by government interference, did not have any hearty, yet pension-receiving, unemployed, had not entirely forgotten that on production rested the good fortunes of all our citizens and still remembered the wholesome fact that work is the happy heritage of the poor and rich alike. "Greater," yes, and happier, "is he that serveth than he that sitteth at meat."

Our government will not save us. It is our own strong arms and healthy impulses that will move us onward to prosperity. It is perhaps a good thing to distribute, with admirable precision, a shortened necessity, but better is it to spend time and energy on the producing so much of a necessity that we can let the distributing follow natural lines.

In Great Britain the government fears to advocate production for fear it may raise a quarrel about a distribution of the product. Here, we are not afraid to approach the question of production and, if production be large enough, distribution may be suffered to regulate itself.

Of course, we have no great reason for congratulation. We have Great Britain's foibles in large measure. Production has fallen; shorter hours and more privileges are under discussion; strikes have been many. While we have avoided many of the British heresies, we have in part accepted them and in a degree we have dallied with them.

To produce to produce and again to produce is the simplest solution of our after-war difficulties. To have faith in the future and in work as the saving element in all economic troubles is the surest way of meeting the future. Let us have no diagram but work, and faith in work. No nostrum will meet high prices. It is well-directed labor, that old specific for national ills, which will put the elixir of life into a war-stricken body.

Let the year of unrest and uncertainty and strikes be followed by a year of hard work and industrial co-operation. Let the miner co-operate with the farmer so that each supplies the other generously with products. Let the worker in metals do his part in supplying both with steel for tracks, tractors and automobiles.

Variation of the "Buy Early" Campaign

In Salt Lake City, Utah, has been formed the Mutual Coal Co. which offers its stock in blocks of five shares or over to coal dealers and agrees to give its stockholders coal during June, July and August at cost, charging current market rates through the rest of the year. It hopes to promote storage in this manner and keep its mines working every day in the year that cars are available. Its coal land (640 acres in extent) is under lease from the state of Utah. It has a fee holding of 160 acres for tippie, storage yard and townsite. The capital is \$250,000.

Use of the Geophone for Mine Signalling

BY MARK MEREDITH
Liverpool, England

AMONG the interesting inventions which were developed during the trench warfare in France was an apparatus known as the geophone. This device was employed to detect the direction in which mining operations were being carried on by the enemy. It proved of great service and, in its final form, was found to possess a remarkable sensitiveness.

The principle involved is that of the seismograph, in which records of earth movements are obtained through the relative motion between the earth and a suspended mass possessing large inertia. The relative motion in the case of the geophone takes place between an iron ring which is in contact with the ground, and a lead disc, fastened between two mica discs, and thus held within the iron ring in a central position. Two metal caps hold the mica discs in place, and a hole bored in the upper cap communicates variations in internal air pressure to the ear by means of a rubber tube. When the case is shaken by the feeble tremor from a distant blow, the lead disc is comparatively undisturbed, and hence there are compressions and rarefactions of the air within the case which produce characteristic sounds.

Happily there are no longer anxious men sitting in stifling underground tunnels straining their ears to detect the sounds of the German picks, and it is now proposed to apply the geophone to rescue work in mines. Tests have been made to determine the limiting distance at which disturbances can be heard. The sound of a pick striking a rock was distinctly identified at a distance of 900 ft. through coal and earth, while a heavy blow delivered with a sledge hammer was heard 1,150 ft. away. It appears that the presence of galleries and rooms in the intervening space makes little difference in the loudness of the sound, but the amplitude varies to some extent with the nature of the material traversed, metalliferous rock transmitting sound better than coal deposits.

GEOPHONE DETERMINES DIRECTION OF SOUND

Because of the fact that the ear is easily able to detect differences in the amplitudes of two sounds when they are made in separate ears, it is possible to use the geophone to determine the direction from which impulses shaking it are arriving. Two similar instruments are used, one being moved until the sound appears equally loud in both ears. The direction of the impulse is then known to be perpendicular to the line joining the two instruments.

This method, which might seem incapable of giving great accuracy, has been proved by experience to be of considerable service in assisting in the alignment of tunnels, and instances have been already recorded where the direction of an approaching tunnel head has been obtained by the geophone and found to coincide, with remarkable exactness, with that determined by the accurate surveying instruments upon which it is usual to rely. The distance of the disturbance can be found from experience if the impulse is constant in amount. This is, however, an inefficient, unsatisfactory method, and better results may be expected by taking simultaneous observations at two separate points and finding the point

of intersection of the lines indicating the direction of the approaching disturbance.

There can be little doubt that this ingenious, simple contrivance will facilitate the task of establishing communication with entombed miners after an explosion and enable the work of rescue to be undertaken rapidly and efficiently. One interesting and valuable feature of the apparatus is the ease with which the character of the disturbance can be identified. A blow from a pick or shovel produces a sound which is quite different from that made by a fall of rock.

The question of the likelihood of the geophone being frequently employed in mines depends to some extent upon the future developments of the wireless telephone. The possibility of transmitting speech direct is attractive, and has been the subject of experiments dating back as far as 1887, when A. W. Heaviside succeeded in transmitting telephonic messages through 350 ft. of earth. In these experiments two metallic circuits each over two miles in length and parallel to each other were used, one laid on the ground from the pit mouth and the other in a gallery of the mine.

The remarkable advance of the sensitiveness of receiving instruments which has taken place recently will almost certainly make it possible to communicate from a sending station above ground with any position within the mine. The apparatus for receiving the message is, however, necessarily complicated and requires trained operators, so that the simplicity of the geophone and the possibility of its use by the unskilled are important arguments in its favor at present.

Fuel vs. Water Power

The Division of Power Resources of the U. S. Geological Survey publishes the following tables of production of electric power and consumption of fuel by the public-utility power plants of the United States during the second, third, fourth and fifth months of last year.

It states that the daily output in kilowatt-hours was in February, 106,531,000; in March, 101,609,000; in April, 100,870,000, and July, 101,366,000, while the percentage produced by water power was 39 in February, 42 in March, 43 in April, and 39 in July.

Reports were not received from all the sources from which they should have arrived. About 3,000 electric power plants have been heard from, and the generator capacity of these plants is, roughly, 90 per cent of that of all the public-utility power plants of the United States. To make the returns complete, estimates were made from available information of the output of plants regarding which no returns were received. The figures are subject to revision in subsequent statistical records of the U. S. Geological Survey relating to power production.

A comparison as to the most efficient use of water power or fuels, which compromise coal, petroleum and derivatives, such as kerosene, gasolene, etc., and natural gas can readily be observed as soon as statistics are completed, showing conditions during the latter months of the year. These will also be published.

THOMAS F. HOLMES

ON JAN. 26, 1920, passed away Thomas F. Holmes, one of the most prominent figures in the coal industry in Illinois. At the time of his death he was general superintendent of the properties of the Chicago, Wilmington & Franklin Coal Co.

Mr. Holmes was born in Brooklyn, N. Y., Feb. 7, 1861. He came to Illinois with his parents when he was about five years old and has resided at Lincoln, Ill., almost continuously since that time. He was educated in the Lincoln schools and began work as bookkeeper in one of the mining offices of that town in 1883. From that time he has been identified with the production of coal. He served as workman, foreman, and in various other capacities, until 1889. In that year he became mine superintendent at Niantic, Ill., in which position he remained for three years. He then returned to Lincoln, accepting the superintendency of the Citizens' Coal Mining Co.'s property, and here he continued for 24 years, acquiring later an interest in the local mines at Lincoln.

He was one of the pioneers in the Illinois Coal Operators' Association, the organization that bore the brunt of the collective bargain that just then developed. He was, in fact, a charter member in the association. Later Mr. Holmes became superintendent of the Chicago, Wilmington & Vermillion Coal Co.'s mine at Thayer, Ill. He held this position for five years, and was then appointed general superintendent of the Chicago, Wilmington & Franklin Coal Co.'s properties, which at the time of his death included eight mines with a daily production of 22,000 tons.

Mr. Holmes was married on Sept. 8, 1885, to Miss Jenny McCann. He is survived by his widow, three sons and three daughters, two brothers (Stephen Holmes and W. H. Holmes), two sisters (Mrs. Ellen Maloney and Mrs. Mary Thompson) and one grandson. He was an ideal father and took special pride in his family of fine children. He was a member of the Lincoln Elks and Redmen's Lodges.

Mr. Holmes combined the qualities of kindness and consideration for others, which gave him an unusual standing with his workmen, with a fidelity to his duty as he saw it. These qualities made him invaluable to the concerns with whose work he was entrusted. His sound judgment, strict justice and absolute conscientiousness made him sought after in councils, and for 15 years he served as a member of the Executive Board of the Illinois Coal Operators' Association. He served on the Illinois State Powder Commission for two years and was throughout his life identified with matters of civic welfare and social improvement.

AN OBITUARY



His loss will be greatly felt not only by his associates in the Chicago, Wilmington & Franklin Coal Co. but by the entire industry of the state. His life was marked by a most faithful performance of duty, a constant appreciation and participation in the aims of the organization which he served, and a most remarkable record of accomplishment. The properties coming successively under his management progressed under his logical plans and prospered as the outcome of his untiring energy. He was never too busy to give matters his personal attention and up to the time he was stricken by his last illness he daily might be found in an active discharge of his duties. His capacity for work was unusual and he enjoyed the game of constantly surpassing the old records of accomplishment.

To those who are not Illinoisans it may be permissible to add that the Orient No. 1 Shaft was one of the eight mines mentioned as those over which Thomas F. Holmes had charge. It is the leading shaft of the country from the point of output, and many of its original features are becoming standard practice in the southern Illinois field. Other mines the operation of which he directed were Benton No. 2 at Benton, Ill.; "B" Mine, at Herrin, Ill.; "A" Mine at the same place; Thayer No. 1, at Thayer, Ill.; South Wilmington at a village of the same name, and the Royal Colliery, at Virden, Ill.

In honor of Mr. Holmes the operation of all his company's mines was stopped on Thursday, Jan. 29, when, in the little town of Lincoln, his body was lowered into the grave. The suspension of work lasted only from 9:30 to 9:45 a.m., and the organization, which largely lived and breathed with the power he had put into it, again took up his work, doubtless to exhibit the fact that acts of industrial leaders are not disconnected performances but serve as inspiration and power to those who come after. What one man has done others succeeding them can and will do profiting by the example of their predecessors.

The Chicago, Wilmington and Franklin Mining Co., through President Geo. B. Harrington, of Chicago, paid high tribute to Mr. Holmes in a letter addressed to the company's employees. To quote his words: "From the foundation of the company in 1914, Mr. Holmes has given tireless devotion to his work, and his leadership has been a constant inspiration to his associates. To him must be given a very large measure of credit for the success which the company has won."

Mr. Holmes was not quite 59 years of age when he died but he had outstripped meanwhile many men with larger advantages but less force of character.



WHAT THE ENGINEERING SOCIETIES ARE DOING

American Engineering Standards Committee

AN INTERNATIONAL body to approve American engineering standards and to co-operate with similar organizations in other countries is made possible by a new conference termed the American Engineering Standards Committee. Similar organizations are now functioning in Great Britain, France, Switzerland, Holland and Canada.

Through the new committee the methods of arriving at engineering standards will be unified and simplified and, by co-operation, the duplication of standardization work will be prevented. Standards will not be created without giving all interested an opportunity to participate.

The "approval" of a standard by the American Engineering Standards Committee does not mean that the committee has itself worked over and approved each detail, but rather that the work has been carried out by a sectional committee adequately representing the industry concerned, and sponsored by one or more bodies of ability, experience and standing, so that the result may stand for what is best in American engineering practice.

The committee is not only ready for business but it has made considerable practical headway. It has approved specifications for standard pipe threads, for which the American Society of Mechanical Engineers and the American Gas Association are sponsors, and are representing America on this subject at an international conference in Paris. Co-operation is in progress with the National Screw Thread Commission, authorized by Congress and composed of representatives of the various technical societies, looking forward to standard screw threads. Through this arrangement, direct co-operative work with the British, which is not possible by the official commission, is being carried out. The committee is also in active co-operation with the Canadians on bridge specifications, with the British on specifications for machine tools, and with the Swiss on specifications for ball bearings. In each case the detailed work is being carried out by sponsor bodies by means of sectional committees.

When the E. S. N. E. P. Banquets

When the Engineers' Society of North-Eastern Pennsylvania meets to banquet, as it did at the Hotel Jermyn in Scranton, on Wednesday evening, Feb. 4, a more lively bunch of fellows can scarcely be found. Serious grinds, who have taken up with mathematical sciences and steeped themselves in erudition come to the banquets of the Engineers' Society and exhibit a frolicsomeness that would make one seriously question how

they could take up such dour studies and embrace such a serious profession as that of engineering.

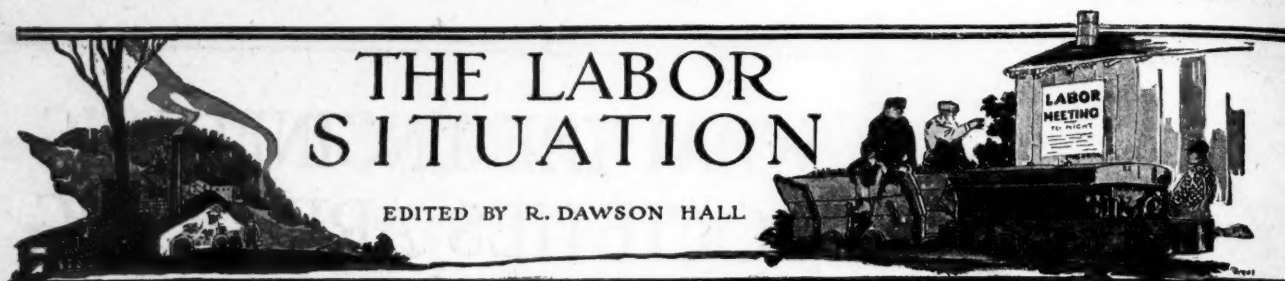
Menus in the form of a bottle were the only bracers provided at the banquet. They showed a picture of a man watching a whisky still, labelling it: "A Very Hazardous Branch of Engineering—A Drawing from Still Life." The menus add "The banquet committee, at this sober moment, wishes to invite attention to the following terms used frequently by those in the engineering profession and asks that suitable substitutes be furnished in order that we may enjoy the freedom that is guaranteed to us under the Eighteenth Amendment: 'gin' pole, 'whisky' jack, 'spirit' level, 'bar'-wound armature, 'still'-son wrench, 'siphon,' 'tank,' 'tipple' and 'flask.'"

Evan C. Jones, assistant district attorney of Luzerne County, a witty Welshman, congratulated the party on the merriment they had achieved upon water. Some few, he said, had been able to get something stronger than water and they were entitled to even greater congratulations. He stated in his remarks that he and his Wilkes-Barre associates, who had come to Scranton in large numbers, had been promised surface support and in return were giving their moral support.

Gustave F. Smith, the president of 1919, reported an increased income during the past year of \$715 with 55 new members and 434 members in good standing. Hugh A. Dawson, the incoming president made a short address. Con. McCole, who can imitate the dialect, mannerisms and appearance of all the polyglot peoples inhabiting the anthracite region had the party convulsed with his witticisms. He wound up with his "Miner's Convention." He tries to avoid repeating this feature, but his admirers—and who may not be numbered among them—will never allow him to sit down without this part of his repertoire.

Col. Joseph Thompson addressed the banqueters on "The Engineers in France," who did everything but engineering. Of 1,000 men in his command only 55 privates, one noncommissioned officer and himself came out on their feet. He had both his arms in a sling. The colonel declared himself of the belief that the co-operation between officers and privates during the war was possible between officials and workmen in peace if only the latter knew the plan and purpose as well as did the privates during the war.

Dr. O. F. Lewis spoke on "The Social Unrest and Its Causes," laying it to inhibited powers and ambitions. He believed that community councils would do much to furnish the antidote, permitting of activities which undirected would be likely to drift into improper channels. A Welsh quartette, named Cambria after the old Latin name of the principality, exhibited well how much the Welsh element in the anthracite region helps to maintain the musical standing of that community.



Hayes Resigns Presidency

On Feb. 6, the international executive board of the United Mine Workers of America accepted the resignation of Frank J. Hayes, the international president, putting Vice-President John L. Lewis, of Springfield, Ill. (long acting vice-president) in his place. Philip Murray, the president of the Pittsburgh district, becomes vice-president. For more than a year Hayes has been in poor health, the outcome of a nervous breakdown. After some months in a sanitarium he went to Denver and is there now, endeavoring to recover his lost health.

Robert R. Gibbons, who is vice-president of the Pittsburgh district, will succeed Philip Murray as president of that district. He came to the city of Pittsburgh from Scotland in 1903 and in July, 1916, was appointed vice-president to which office he has been elected twice.

Operators Make Their Case

At the hearings of the operators before the Bituminous Coal Commission the earnings of leaders were illustrated by Mr. Crews by the following table for January, 1919, which begins with loaders who worked at least twenty days of the twenty-seven days running time:

WAGES OF MACHINE-COAL LOADERS

Number of Men	Days Worked	Average Earnings for the Days Worked
46	20	\$116.39
62	21	127.65
52	22	131.76
61	23	138.02
77	24	145.88
48	25	154.00
30	26	169.84
21	27	197.06

WAGES OF MACHINE RUNNERS AND HELPERS

Number of Men	Days Worked	Average Earnings for the Days Worked
4	20	\$168.00
4	21	159.75
7	22	185.57
12	23	211.17
6	24	212.33
11	25	186.00

At this stage of the presentation of the earning and working sheets of the mining corporations, Mr. Crews said to the Commission: "If you could analyze the question of absenteeism without cause down to a final and definite conclusion you would find, and the figures so indicate, that the machine runners are much less often absent than the pick miners or loaders."

The relative merits of the contentions of the miners and operators as to the actual earnings of the miners, and the far-reaching effect of the failure of a large proportion of individual miners to work the full time available, were put in an entirely new light by the data submitted to the commission for the operators by Attorney Crews of New York when the commission resumed its hearings Monday morning, Feb. 2.

The figures were new, taken from the mine records, and giving for the first time the fundamental statistical facts of the coal industry for the ten months' period from January to October, 1919. The trend of the data was that during those ten months previous to the strike the miners made appreciably more than the "decent living wage" which their representatives have urged they were unable to make.

Authenticity of the figures, Mr. Crews explained, rested upon the fact that they were taken bodily from the pay-rolls of the mines themselves, and as a further voucher

for their reliability he informed the commission that the compilation had been made by C. E. Leshner, who, as an expert of the U. S. Geological Survey, was in charge of the mineral fuel statistics.

On account of the time limitations imposed upon the inquiry and the requests of the commission that the results obtained be submitted forthwith, the operators had been unable to carry the data to the full extent originally mapped out when the compilation was begun last December. The data as offered embrace 15 per cent of the working forces of the mining fields involved. It covers both the thick-veined and the thin-veined districts of Western Pennsylvania, Ohio, Indiana and Illinois, all embraced by the Central Competitive field.

It was made clear by Mr. Crews that the data were taken impartially from the mine records in such a way as to give actually representative figures and not "hand-picked" data such as would arbitrarily make out a favorable case for the operators. This was borne out by Mr. Leshner's statement that the mine managers had been directed to select the mines with reference to character, both industrial and fuel, to divide up the fields so reports would be given of mines with the poorest running time, as well as the best, and so that car supply should likewise be taken into consideration.

IRREGULAR WORK CAUSES LOW EARNINGS

Tables showing a striking variation from the claims hitherto advanced by the miners as to their total monthly earnings and revealing the great extent to which the irregularity of the miners in pursuing their work detracts from their potential earning power were then read into the record.

That the miners were able to make much more than an average of \$5.00 a day, as argued by the miners' representatives, was shown by a table offered for the Pittsburgh thin-vein district. In this table, taken direct from the mine sheets, it was shown that during the month of January, 1919, pick miners who worked the maximum running time of 27 days made over \$9.50 per day, while the miners who worked two-thirds of the time made over \$6.23 per day. The table follows:

WAGES OF PICK-MINERS

Number of Men	Number of Days Worked	Average Earnings for the Period Worked
10	1	\$7.81
3	2	5.20
5	3	19.82
2	4	18.20
3	5	34.86
6	6	42.31
1	7	18.94
7	8	39.54
9	18	112.29
14	19	138.58
13	20	150.48
14	21	161.61
15	22	157.92
27	23	157.76
37	24	179.86
30	25	207.43
27	26	227.14
30	27	244.43

TIME WASTED BY THE MINER

Taking up the tables for October, 1919, the last month preceding the strike, it was said that although the conditions for marketing and for car supply were 100 per cent favorable to the miner putting in full time, neither the pick miners nor loaders availed themselves of the opportunity to make a maximum wage. "But take the machine runners," pursued Mr. Crews, "There is nobody working one day only; nobody worked just two days or three days."

He cited the following table for machine runners for October, 1919:

Number of Men	Days Worked	Average Earnings per Man for Period Worked
2	4	\$31.50
1	5	50.00
2	9	67.50
1	12	57.00
1	13	82.00
1	14	94.00
1	16	129.00
1	18	155.00
2	20	109.00
2	21	154.00
2	23	173.50
9	24	218.78
14	25	224.79
28	26	222.50
8	27	247.00

The greatest average of men in any district in Illinois who worked 75 per cent or more of the time at their disposal, Dr. Honnold said, was 61.2 per cent. In two thick-seam districts of the Central and Southern fields of the State, where more than 50 per cent of the State's tonnage is produced, he said, only 28.3 per cent of the men put in three-fourths of the time offered them.

In the most productive district of the State, Dr. Honnold showed, 38.8 per cent of the men were idle for half the time, while in the poorest district 71.7 per cent labored less than half time, 36.2 per cent working less than one-fourth of the days open to them.

MORE INDUSTRIOUS MINERS EARN \$3.74 A DAY

Dr. Honnold's figures showed that the more industrious miners easily averaged \$7.34 per day, while the men who worked but part of the time averaged from \$4.34 to \$6.62 per day. These figures were taken from the ten months of 1919 before the 14 per cent wage increase was given the miners.

CAR-LOADERS' TIME OFF AFFECTS COST

Failure of coal-car loaders to report for work and get the coal out of the mine added 10 per cent to the production cost of the coal, said Dr. Honnold. This was because the men paid by the day had to be carried on, even though the coal was not up on the ground where they could handle it.

Emphasizing the necessity of a penalty clause to make the miners keep their contracts, Mr. Maurer called the attention of the commission to the number of strikes which have occurred in Ohio in spite of the Washington agreement. A summary for the district of Eastern Ohio showed that 70 mines had been affected by 102 strikes, with a loss in days of 25 8 and in tonnage of 327,700.

"In Southern Ohio," continued Mr. Maurer, "the exhibit shows by reason of strikes a total loss in hours of 2,088, and in tonnage of 109,207, this being during 1919. They carried through their tonnage loss by the general strike in November and show the total loss in hours to be 70,905, and in tons of 2,687,153.

MINERS' HEALTH SHOWN BY RECORDS

Authoritative reports and statistics from insurance officials, physicians and other reliable sources clearing up misconceptions regarding health and hazards in the mining industry, were introduced by Tracy L. Guthrie, of Pittsburgh, for the operators. Attacking the miners' statements that the work was dangerous to health, he filed a synopsis of replies from 49 physicians to the tenor that claims of the prevalence of miners' diseases were greatly exaggerated.

Regarding assertions that children were forced to stay out of school on account of lack of food or suitable clothing, virtually all of the physicians reported that no cases of malnutrition come to their notice.

From the annual report of the Pennsylvania Insurance Commissioner, on the subject of the hazards and dangers of mine work, figures were presented showing that coal mining is only half as dangerous, as to accidents, as threshing machine or concrete work. In fact, according to the commissioner's reports, next to blast-furnace work and the making of rough building papers, mining ranked as the least dangerous of 53 occupations listed, being even one-third less hazardous than the collecting of garbage.

Would Unionize Pocahontas Region

State-wide interest is manifested in the arrival at Bluefield, W. Va., in the heart of the Pocahontas region on Jan. 30 of John L. Lewis, acting president of the United Mine Workers of America, to take personal charge of the preliminary movement to organize not only the Pocahontas region but the vast territory in southern West Virginia including the smokeless and high-volatile regions which furnished the bulk of production during the November strike, this being the first real attempt to organize the miners in the southern end of the state, aside from the effort in the Guyan region.

PREPARE GROUND FOR COMPLETE LABOR TRUST

This sudden move on the part of the head of the United Mine Workers at a time when many mooted questions are pending before the Bituminous Coal Commission at Washington created a flurry not only in the Pocahontas region but in all the unorganized fields in southern West Virginia including the Winding Gulf, Tug River, Williamson and Guyan fields and it was generally regarded as the forerunner of another general strike, because, when the recent nationwide strike occurred it was the unorganized West Virginia fields that prevented the United Mine Workers from forcing a complete suspension of the coal mines of the country. It is therefore assumed that the mine workers are seeking to strengthen these weak points in preparation for another general strike.

A number of other labor leaders accompanied Lewis to Bluefield. It was reported that C. F. Keeney, president of District 17, was a member of the party, but Keeney, it was learned, was in Charleston during Lewis' sojourn in Bluefield. A number of conferences were held between Lewis and the labor leaders in Bluefield, and, it is said, the matter of obtaining quarters for representatives of the United Mine Workers' organization was under discussion. Lewis admitted that an effort would be made to organize the miners throughout southern West Virginia and that the campaign with that end in view would be waged with Bluefield as the center of operations.

INDISPOSED TO UNIONIZE INTERNATIONALLY

While admitting it was the purpose of the United Mine Workers to bring all miners in southern West Virginia into the fold of organized labor, he was rather loath to discuss details, but did claim that he had been in touch with representatives of his organization who had been making a survey of conditions in the Pocahontas field. He also claimed that he had visited several points on the Norfolk & Western Ry. and that he had found mine workers inclined to favor the formation of local unions. Much doubt is entertained as to whether the miners as a whole desire the advent of the organization, for the earnings of the non-union miners are larger than those of the miners in the union fields further to the north.

Furthermore, during the strike, many union miners migrated to the non-union fields of West Virginia and while some of those who deserted from the union may still desire to see it take in new territory it is believed that the men who came from the union to the non-union fields have created sentiment against, rather than for, the organization of the unorganized regions and that the recent strike instead of strengthening the chances of organizing the Norfolk & Western territory and adjoining areas has rather weakened such chances.

REMBRANDT PEALE AND WHITE COMMENDED

After commending Commissioners Rembrandt Peale and John P. White for their services as members of the United States Fuel Administration under Dr. Garfield, during the war, Mr. Lewis quoted both Mr. Peale and Mr. White as having recommended in 1918 that some increase be given the miners "as a patriotic matter." "If this recommendation had been followed," said he, "the country would have been spared the distressing conditions of the past few months." He also referred to Dr. Garfield's decision in 1918.

What the 14 Per Cent Increase Means to the Operators

What the application of 14 per cent wage advance means to the operators was emphasized by Mr. Crews in his summing up. He adverted to the financial analysis of labor and other costs, income and tonnage produced by the coal industry during the first ten months of 1919, derived from mine reports compiled by Attorney Jean Paul Muller of Washington, D. C., as constituting the best evidence as to this. To obtain results representative of the Central Competitive bituminous territory, typical of the situation as a whole, Mr. Muller's analysis was centered on the reports of the Pittsburgh Coal Producers' Association, the Pittsburgh Vein Operators' Association of Ohio, the Southern Ohio Coal Exchange, the Indiana Coal Operators' Association, Coal Trade Bureau of Illinois, Illinois Coal Operators' Association, and the Central Illinois Coal Bureau for each of the ten months ending Oct. 31, 1919.

PROFIT IN PITTSBURGH FIELD 4 PER CENT

"If we look upon the ten months ended Oct. 31, 1919, as the basis for the present," reported Mr. Muller, "we find that the Pittsburgh Coal Producers' Association reports 22,127,736 net tons of coal produced at a total labor cost of \$29,997,749.79, while the margin, or amount left over after all the standard costs of producing the coal at the mouth of the mine were deducted from the sum total realized from the sale of coal was \$5,784,852.64. At 6 per cent per annum on a capital charge for investment in property amounting to \$6.30 per ton produced, the compensation for capital investment required would be \$8,364,284.21, so that the margin on coal represented little over 4 per cent.

"Under the present labor scale involving an increase in labor costs of 14 per cent, on the same tonnage produced, this increase will absorb \$4,199,684.97 out of the margin of \$5,784,852.64, leaving the compensation for capital investment approximately 1 per cent.

"The Pittsburgh Vein Operators' Association of Ohio on a production of 5,353,494 tons shows a labor cost of \$6,900,605.30, with a margin of \$1,239,323.40. If the 14 per cent increase in labor cost amounting to \$966,084.74 is deducted therefrom, the compensation for capital invested is less than 1 per cent.

"The same is true of the Central Illinois Coal Bureau, while the following will not have any compensation for capital invested but actually will fall short of meeting expenses.

OHIO, INDIANA AND ILLINOIS WILL LOSE MONEY

"The Southern Ohio Coal Exchange with a marginal loss of \$208,244.75, plus 14 per cent labor increase of \$615,008.17 would have a total loss of \$823,252.92;

"The Indiana Coal Operators' Association out of a margin of coal of \$357,256.04 will have to meet a 14 per cent increase in labor costs amounting to \$1,776,831.41, thus facing a deficit of more than \$1,400,000.

"The Coal Trade Bureau of Illinois out of a margin of \$161,276.71 must meet a 14 per cent increase in labor costs amounting to \$338,293.54, leaving it more than \$220,000 short of meeting its expenses, while the Illinois Coal Operators' Association, out of a margin of \$1,655,726.89, will have to meet a 14 per cent increase in labor costs of \$2,933,239.82, leaving it nearly \$1,300,000 short of meeting expenses."

In summing up the arguments during the morning session for the United Mine Workers, Acting-President Lewis expressed the opinion that the facts laid before the commission by the operators had not impaired the position of the miners. In spite of the original sources from which the payroll summaries were taken, Mr. Lewis maintained that the earnings of the miners were inadequate, saying that the best the pick miners could make a year was \$1600, whereas an estimated budget of the yearly income required to support a miner's family of five was \$2243.94.

Mr. Lewis quoted from a letter written to him by Secretary of Labor Wilson recapitulating the latter's view that the miners should be given a flat advance of 31.6 per cent

or 27½c. per ton, and \$1.58 per day for day laborers. He also attacked former Fuel Administrator Garfield's method of arriving at the 14 per cent advance.

Penna Declares Miners Are Prosperous

Vigorous summing up by representatives of the miners and the operators on the points in controversy in the investigation by the President's Bituminous Coal Commission into the Central Competitive Field, embracing Ohio, Indiana, Illinois, and Western Pennsylvania, occupied the commission's proceedings on Feb. 3, the other bituminous-coal regions being heard later.

After Acting-President John L. Lewis and Secretary William Green of the United Mine Workers had argued once more for a 60 per cent wage advance, with the six-hour day and five-day week, representatives of the coal operators in reply insisted that the existing wage is adequate and that the miners' demands are unreasonable and unjustified.

Attacking the wage demands of the miners, Phil H. Penna, head of the Indiana operators exclaimed:

"Reduced to the last analysis the demands of the miners are: 'More money for less work'. Let us face the facts without camouflage". One outstanding difficulty the operators have to face in dealing with the miners' union representatives, he said, was the failure of the unions to keep their contracts with the operators. Both sides, he insisted, should be held responsible.

CONTRACT BREAKERS AND SLACKERS

"Our contracts now are mere scraps of paper so far as observance by the miners goes". He went on to say that there were 114 mine strikes in Indiana in spite of 'strike-proof' contracts between the operators and the miners.

"The mine workers' representatives have become special pleaders for violation of contracts." "If it were in my power today to operate non-union mines instead of union mines, I would do so. The position of the non-union mine operator is not so good, but it is better than being in the clutches of the union. I say this in spite of the fact that I recognize the right of working people to unionize. This commission should make agreements enforceable, or make no contract at all".

Mr. Penna denounced what he characterized as the "slacker" among the miners, the man who, as he put it, declines to avail himself of the full opportunity afforded him to work. He declared that this type of miner, regardless of his own responsibility, was seeking to influence the entire mining industry. The slacker calls for shorter hours and more pay. The existing scale of wages, he said, was ample for the man who took full advantage of the working time.

Mr. Crews urged that inadequate car supply seriously embarrassed the coal industry today, and urged a better distribution for coal to the market. He attacked the data of average wages offered by the miners, saying that the miners had not used typical instances, but had endeavored to show by arbitrary figures that wages in general were low.

If the commission wished, he said, the operators would produce ample figures to show that the potential earnings of the miners could be increased 25 per cent, if they would work the time offered to them.

MINE WORKERS ARE SAVING MONEY

To demonstrate the prosperous money conditions of communities made up largely of miners, Tracy L. Guthrie of Pittsburgh gave the commission reports from savings banks, and other financial institutions in twenty-eight mining towns, selected at random in western Pennsylvania, showing that savings deposits had increased \$12,000,000 in the last four years. The report embraced 46 banks in operation since 1914 and seven banks established since.

Demands of the operators touching basic points in the controversy were spread upon the commission's records during the day. Among these is a demand for the abolition of the check-off system, under which the operators, by an arrangement with the miners, collect dues for the Mine Workers' Union from the miners' pay. This "check-off" produces \$15,000,000 for the United Mine Workers.

Where Miners Violated Injunction

So far as is known the only section of the country in which the mine workers' strike continued after Dec. 11 was that part of the New River field of West Virginia where the operators refused on Sept. 1 of last year to enter into a contract with the miners that would grant them the "closed-shop" and the "check-off." These operators represented about 20 per cent of the tonnage of the New River district. Their declination to become a party to the new contract caused the mine workers to declare a strike at the mines owned by those so refusing, although there were many miners who would have been glad to have continued at work. The strike remained in full force until about the middle of November, the miners still occupying the houses of the coal companies.

When, however, the New River contract of Sept. 1, none too popular anyway among the miners of District 29, became automatically abrogated owing to the miners of the district as a whole going on strike and the miners generally in the field returning to work without the check-off, even voting to return to work without it, a great many of the miners in the field where the new contract had never been in force also began returning to work. Of course in many instances miners who did return to their picks and shovels were non-union miners, but that was not wholly true.

The point is that the miners in the particular section affected were not ordered back to work by officials of District 29, the leaders in that district making the plea that the Indianapolis agreement did not apply to that part of their district where there had been a strike prior to Nov. 1. It will be recalled that the same plea was made by Alex Howat for the Kansas miners and that it was not until after Howat was threatened with a sojourn in jail that he ordered his miners back to work.

The New River situation was exactly similar yet so far as is known neither officials of District 29 nor the Government have taken any action to force a compliance with the Indianapolis agreement even though the continued strike in the face of the Indianapolis agreement and a Federal restraining order issued by Judge Keller culminated in an attack by strikers on miners while on their way to work at the mines of the Willis Branch Coal Co., on Tuesday, Jan. 20. Not satisfied with an attack on mine workers, strikers also entered and wrecked the electrical hoisting machinery of the company, causing damage amounting to thousands of dollars.

No precaution had been taken by the company to guard its property because officials of District 29, United Mine Workers, had assured mine owners that no violence would be tolerated or permitted. It is understood that the question of stopping the strike in the New River field has been referred to the President's Bituminous Coal Commission. Inasmuch as the commission is to pass on such matters it is also believed by the operators of the New River District as a whole that it is proper for the commission also to pass upon the restoration of the check-off now being demanded by the miners.

Central Competitive Operators' Demands

The demands of the Scale Committee of the Central Competitive Field as presented before the Coal Commission are as follows:

No. 1.—The present system of collecting dues and initiation fees from the mine workers, and enforcing the payment thereof by deductions from their earnings through the offices of the operators imposes burdens upon the operators for which there is no economic justification, and is unjust to many employees of the operators. The operators therefore request that the practice be abolished.

No. 2.—As the house rent charged the mine workers and the price charged them for their domestic coal have been written into the contracts in some of the states, and the adjustment of those charges, from time to time, is the cause of much dissension, we request that the commission, in its findings, fix an equitable method of dealing with these matters.

No. 3.—The operators request that the commission recommend to the Congress of the United States the enactment of legislation requiring associations of employees which make contracts of employment with employers to take such action as will make them legally responsible for the fulfillment of the contracts so entered into.

No. 4.—The operators request that the national officers of the United Mine Workers of America and the national organization, being parties to the making of the contract, be required to assume responsibility for enforcing the terms of such contract in the various districts, notwithstanding the present limitations in the Constitution of the United Mine Workers of America.

No. 5.—As a matter of safety to employees, and as there is now no system by which the actual working time of the mine workers can be determined, the operators request that the contract shall provide that time clocks or time devices may be installed at mines, and that the miners and inside day-men be required to register when they enter or leave the mines, and that the outside day force be required to register when they arrive at or leave the mine. All men refusing to comply with such requirements to be subject to discharge.

No. 6.—The operators request that the commission, in its award, provide for the introduction of devices or machinery which may serve to reduce the cost of coal, and consequently the cost to the public, and for which there is no scale of wages in the then-existing contract.

Farrington's Wage Figures Untrue

When Frank Farrington, president of the Illinois United Mine Workers, told President Wilson's Coal Commission that the miners in Illinois are now getting only \$3.72 a day, he could not have been thinking of those who work around Edwardsville and Collinsville. At these places the men are receiving from \$8 to \$12 a day and it is understood that these figures represent the miners' earnings throughout the Illinois field adjacent to St. Louis.

The Consolidated Coal Co. paid at its mine No. 17 at Collinsville, a few days ago, \$36,231.50, an average of \$103 a man for two weeks' work. The pay at the Donk Bros. Coal and Coke Co.'s mine at Edwardsville about the same.

The men might be making more, but officials of operating companies declare that they are holding down production. At the Consolidated mine it was stated that if the loaders had loaded as many cars a day as they did in the latter part of October, there would have been an increase of approximately 20 per cent in their earnings. It is understood that the word has been passed to the men to hold down the production until after the Coal Commission acts.

Miners in the Illinois field are threatening to change their occupation unless higher wages and shorter hours are granted. Propaganda to that effect is being circulated.

British Miners Want Cheaper Coal

Premier Lloyd George of Great Britain recently met a committee of mine workers who demanded that the Government immediately reduce the price of industrial and export coal, limit coal operators' profits not only in the future but retroactively and reduce the price of food and clothing, threatening that if these demands were not complied with they would demand an all-round increase of five shillings daily. That amount was before the war about \$1.22, but now it is only 87½c.

Foreign Born Miners

Figures compiled for the use of Congress in connection with the discussion of Americanization legislation showed that of the total number of employees engaged in the mining of bituminous coal, 61.9 per cent were of foreign birth; 9.5 per cent were of native birth, but of foreign father; and 28.5 per cent were native born persons, having native born fathers.

NEWS FROM

THE CAPITOL

BY PAUL

WOOTON



Anthracite Cost and Prices

DETAILED costs of anthracite coal and a statement concerning margins, including profits, are contained in a pamphlet just made public by the Federal Trade Commission, referred to in last week's issue, entitled "Coal No. 2—Pennsylvania Anthracite." The figures cover costs for 1917 and 1918 and show an increase in costs from January, 1917, to December, 1918, of \$2.02 (approximately 80 per cent) or from \$2.64 to \$2.47. Margins range from 54c. per ton in the first quarter of 1917, and 72c. in the second quarter of the same year, to 35c. in the third quarter of 1918, and 39c. per ton in the last quarter in 1918. It is quoted in part as follows:

"From 99 to 95 per cent of the total tonnage of the commercial production comes directly from the mines, and of the remaining 5 to 10 per cent the greater part is reclaimed from culm banks which were formed in years past through the dumping of coal which was then unmerchantable, but which has since acquired sufficient market value to be worth reclaiming. The product obtained directly from the mines is usually known as 'fresh mined,' that from culm banks is known as 'culm-bank washery,' or simply 'washery.'"

AVERAGE COSTS SHOWN

"The average costs and sales realizations per gross ton are shown below for five specified periods during 1917-1918, for operators who produced about 99 per cent of the total anthracite output in those years.

COSTS PER GROSS TON

Period	Labor	Supplies	General Expense	Total F.o.b. Mine Cost	Sales Realization Per Gross Ton	Margin (Sales Realization over total F.o.b. Mine Cost)
Fresh-mined product of 65 operators:						
January-April, 1917.....	\$1.79	\$0.41	\$0.46	\$2.66	\$3.29	\$0.63
May-August, 1917.....	1.96	.44	.46	2.86	3.65	.79
September-November, 1917.....	2.03	.53	.49	3.05	3.82	.77
December, 1917-October, 1918.....	2.57	.61	.53	3.71	4.18	.47
November-December, 1918.....	3.41	.81	.62	4.84	5.20	.36
Culm-Bank Washery Product of 23 Operators:						
January-April, 1917.....	.35	.16	.34	.85	1.81	.96
May-August, 1917.....	.43	.22	.30	.95	2.26	1.31
September-November, 1917.....	.44	.24	.35	1.03	2.50	1.47
December, 1917-October, 1918.....	.65	.29	.33	1.27	2.91	1.64
November-December, 1918.....	.93	.39	.35	1.67	3.32	1.65
Combined Fresh-Mined and Culm-Bank Washery Product of 84 Operators:						
January-April, 1917.....	1.71	.40	.48	2.59	3.23	.64
May-August, 1917.....	1.83	.44	.47	2.74	3.57	.83
September-November, 1917.....	1.90	.53	.51	2.94	3.76	.82
December, 1917-October, 1918.....	2.38	.61	.53	3.52	4.10	.58
November-December, 1918.....	3.10	.77	.62	4.49	5.03	.54

"About 99 per cent of the total production of the larger sizes of coal (the 'prepared sizes,' which enter principally into domestic use) is obtained from the fresh-mined coal. About 75 per cent of fresh-mined coal consists of prepared or domestic sizes and about 25 per cent of small or 'steam' sizes, which are used

in industries. Most of the coal recovered from culm banks consists of these steam sizes.

"In this report are shown the total f.o.b. mine cost, the sales realization received by the operators, and the margin between it, and the total f.o.b. mine cost. From this margin would have to be paid any sales expense, interest and Federal taxes, the remainder being available for surplus and dividends.

COST OF FRESH-MINED PRODUCT INCREASED

"Comparing the first period with the last period in the above table, it will be seen that the total f.o.b. mine cost of the fresh-mined product increased 82 per cent (from \$2.66 to \$4.84 per gross ton), the sales realization increased 58 per cent (from \$3.29 to \$5.20 per gross ton), while the margin decreased 43 per cent (from 63 to 36c. per gross ton).

"Average costs and sales realizations for operators producing about 42,000,000 gross tons annually (of which about 39,000,000 tons was fresh-mined product, and 3,000,000 tons was culm-bank washery product) are shown below for the fresh-mined product for 19 significant periods between Jan. 1, 1913, and Dec. 31, 1918.

COST PER GROSS TON

	Labor	Supplies	General Expense	Total f.o.b. mine cost	Sales realization over total f.o.b. mine cost	Margin (Sales realization over total f.o.b. mine cost)
January-March, 1913.....	\$1.58	\$0.43	\$0.33	\$2.25	\$2.69	\$0.44
April-August, 1913.....	1.60	0.35	0.34	2.29	2.60	0.31
September-December, 1913.....	1.60	0.36	0.36	2.32	2.71	0.39
January-March, 1914.....	1.71	0.38	0.39	2.48	2.70	0.22
April-August, 1914.....	1.57	0.30	0.36	2.23	2.60	0.37
September-December, 1914.....	1.56	0.31	0.36	2.23	2.73	0.50
January-March, 1915.....	1.71	0.36	0.42	2.49	2.69	0.19
April-August, 1915.....	1.58	0.29	0.37	2.24	2.59	0.35
September-December, 1915.....	1.57	0.30	0.36	2.23	2.73	0.50
January-March, 1916.....	1.63	0.33	0.42	2.38	2.79	0.41
April-August, 1916.....	1.77	0.36	0.44	2.57	2.95	0.38
September-December, 1916.....	1.72	0.40	0.45	2.57	3.14	0.57
January-April, 1917.....	1.76	0.44	0.44	2.64	3.18	0.54
May-August, 1917.....	1.91	0.48	0.46	2.85	3.57	0.72
September-November, 1917.....	1.97	0.58	0.49	3.04	3.74	0.70
December, 1917.....						
March, 1918.....	2.58	0.62	0.53	3.73	4.12	0.39
April-August, 1918.....	2.45	0.65	0.50	3.60	3.99	0.39
September-October, 1918.....	2.55	0.72	0.55	3.82	4.17	0.35
November-December, 1918.....	3.31	0.80	0.61	4.72	5.11	0.39

Note: The bill of material above is for a washhouse 3 ft. narrower than the one given in the detailed drawing and for 6 rows of benches instead of 8; otherwise everything else is the same.

\$50,000 Appropriated for Coal Commission

Without question the House Committee voted the \$50,000 appropriation asked by the Bituminous Coal Commission for its expenses. The appropriation is to cover the salaries of the Commissioners, secretaries, chief clerk and other expert, clerical and other assistance; equipment and supplies, including law books, books of reference, newspapers and periodicals; traveling expenses, per diem allowances in lieu of subsistence, and for printing and binding done at the Government Printing Office.

As some time must elapse before the appropriation can be approved by the Senate and the President.

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Our Growing Soft-Coal Shortage

DURING the twelve months of the year past we used 458,000,000 tons of soft-coal, or roughly 9,000,000 tons a week. This winter, business has picked up so prosperously that, with all the soldiers returned, there must be almost as great an industrial activity as during the war. The scarcity of labor certainly seems to prove it. While labor may not produce as much as before, it assuredly needs, for as many hours as working lasts, about as much power and as much heat or even more than it did when labor was more energetic.

Consequently, increasing man power compensating for decreasing working hours, the average consumption of fuel, the year through, is probably no less than it was during 1918, the closing year of the war, when it averaged about 11,100,000 tons a week. In making that estimate no deduction in the figure for consumption is made for the large stocks left at the end of the year 1918, because the reasons for these stocks were exceptional conditions—the mild winter and the failure of business following the armistice.

It must be remembered that there were reasons why in 1919 the tonnage produced was small. The year commenced with heavy stocks, business was bad, and it ended with no stocks and everyone conserving fuel because of the strike and coal shortage. The past year was certainly abnormal. So looking at the subject broadly it may be safely assumed that our normal needs the year over at the present stage of prosperity are about 11,000,000, rather than 9,000,000 tons weekly.

Just now, we are faced with cold weather and bad working conditions. As a result the amount of coal needed is at its full winter height. Perhaps, if a guess may be hazarded, 14,000,000 tons a week is not too large a figure to put on our present consumption.

As a rule there are big stocks that are gradually eaten into during the winter. During the strike that marked the close of 1919 these stocks were considerably depleted. They were abnormally small, in any event. Consequently it is not surprising that we are faced by a bigger shortage than existed after the strike was concluded. Our output, owing to car shortage, averaged only 11,334,000 tons in the first three weeks of the year and totaled 8,531,000 tons in Christmas week.

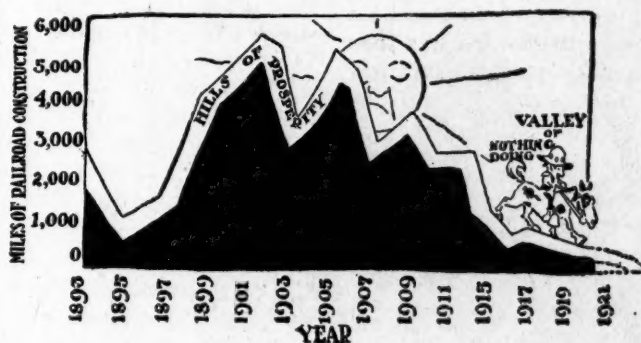
The public breathed a sigh of contentment when the strike ended. Naturally, the consumer thought his difficulties were at an end, but the coal shortage was not cured by the cessation of labor trouble; it was only retarded from continuing to go from bad to worse as fast as it did while the strike lasted. The condition was none too good before the strike; it was disheartening at the end. Yet, with agitation in the New River and Pocahontas fields, the production of coal may soon decline and conditions get rapidly worse.

The public is comparing the output of this winter with that of other winters. But is that safe? We have produced more than in the winter of 1918-1919 because there was, at that time, a glut of coal, the market being overstocked and the winter being mild. We have sent more coal to market than in the winter of 1917-1918 because, then, a big storm prevented the railroads from functioning, because the nation had borrowed many expert and energetic workers from the railroads, and industry had taken from them all the roustabouts and maintenance-of-way men and because equipment ordered for America had been diverted to France, and a licentious red tagging of cars had demoralized traffic and filled every railroad siding.

But not with such times should we be content to make comparisons, for the winter of 1917-1918 was a time of heatless, workless days, imposed by authority and the winter of 1918-1919 a time of joblessness when the nation waited for the word that it was safe to buy goods. We do not wish such conditions to be resumed. Now a severe storm has made matters worse, and the prospects grow less hopeful hour by hour.

Our troubles did, indeed, begin with the strike, but, assuredly, cannot be said to end with the return to work. The evil has been done and only saving and diligence can cure it.

From the Hills of Prosperity to the Valley of Nothing Doing



In 1901 nearly 6,000 miles of railroad were constructed while in 1919 construction dropped off to 686 miles, and 689 miles were abandoned

What Can Bankrupt Railroads Buy?

EVEN THE railroads are not certain as to the outcome of the immediate future. Coal men are wondering whether in the coming spring the railroads will be any more free of unfair practices and delayed purchases if the Government is going to make it impossible for the railroads to undertake financial reestablishment. They naturally wonder whether a commission judging the affairs of corporations will be able to use good judgment, when the U. S. Railroad Administration, making its own rates, did not have political courage enough to make railroad operation profitable. If the commission keeps rates down till it sees how much they must needs be raised, and that is what the outgoing Railroad Administration has done, then the coal year will begin with bankrupted railroads and a penury so great that coal cannot be purchased.

Get a Declaration of Principles

WHEN A MAN declares for the regulation of the public utilities and requires that they be kept down to a profit of 5 per cent or thereabouts, get from him a declaration of principles. Request him to say that he believes that all industry should be kept down to that maximum or that he believes that only those whose services are universally helpful should be restricted to such a profit.

Ask him why sewers and roads, things so useful that they are being built by municipal corporations, are being paid for by bonds that are paying that amount of interest, 5 per cent, a rate necessary to obtain the money. And such bonds have the tax-free privilege added. Ask him also if an industry with an element of risk can borrow money, or, if it can, should borrow it, at the same rate of interest or a trifle more than is paid by a municipal enterprise in which there can be no risk so long as the community is solvent. Get from him a declaration of principles.

Most men, having declared exactly what they think they believe, are astounded at the wrong thinking into which they have been led, not by logic but by self-interest. The baiters of corporations are people who do not think. They are temperamental people who feel without thinking. They well know, when the facts are brought to their attention, that they have been surprised not in thinking but in an envious and ungenerous feeling. They would not run any such risks for a small interest which only in fifteen or twenty years would double their money, and they think that there are others who should take that risk. Most of such persons, when they, themselves, invest want to be assured that they will double their money in a year. Of course, only rarely do they achieve their ambition.

They think they believe that the man who devotes his time or his money in a public service should consent to do it for far less than the man who does the same in a trade that does no one any good but rather tends to debauch the public. A little thought would protect them against such odd notions, but how rare is such thought!

Weighed on Its Own Scales

IT MUST be confessed that we are still sitting in judgment over Government ownership and trying it by the standard it set for itself. It promised us a new United States, and we have not seen it. Instead we see that Government ownership has at least left us in the same stranded situation that we would have

been in if the railroads had been suffered to continue private management under the old system of excessive and unsympathetic public control.

The advocates now say that we should try two years more of Government ownership. It is asserted that the Government may be able, if its powers are extended, to go on operating without any further aggravation of our present misfortunes. We have endured Federal mismanagement for several months; with a little courage and self-negation we might endure it for a further period of time of at least equal duration.

The tune has indeed changed. It is now more nearly in harmony with the facts. We now know that Federal ownership is no better than Federal supervision.

Federal Trade Commission

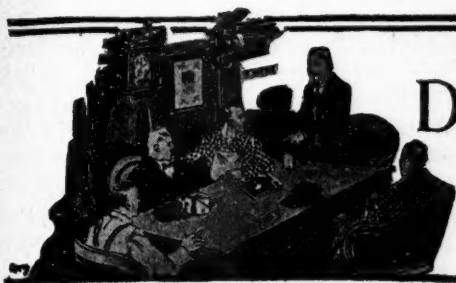
"THE TRUTH, the whole truth, and nothing but the truth" would be a good maxim for the Federal Trade Commission. It stops short of the whole truth when in making its statements regarding the cost of producing coal it overlooks hazards, interest on investment, all kinds of taxes and other like charges. "It would be a fair day if it were not for the rain" must be a reflection of many an anthracite operator who sees in the report of the commission a differential between production and selling cost which he was somehow never privileged to put into his pocket. Seeing, however, that there is a differential between total ingo and outgo, the public and miner feel that here is something for which they may profitably fight. The chunk of "meat" is mostly bone, but those battling for it do not know that. It looks a goodly morsel, but when the gristle of investment

and the ivory of income and excess profits taxation is considered, it is nothing but a dry, unappetizing bone.

Dr. Garfield admitted that he guessed wrong and put prices too low and declared that if the war had continued he would have had to have made an adjustment.

To quote the report: "The costs shown by the Federal Trade Commission are not intended to include any of the following items: Reserves for uninsurable hazards, such as mine fires, floods, cave-ins, squeezes, strikes or similar causes contributory to destruction of property and idleness at the mines (especially as revealed in greater overhead per ton by reason of lessened output); increased risk in the recovery of the capital involved in extra cost of development work under a normal régime in prices of coal; selling expense, where a selling organization other than the mine office force, is maintained in order to market the product; interest on the investment including borrowed capital; allowances for income and excess profits taxes."





DISCUSSION *by* READERS

EDITED BY JAMES T. BEARD

Electric Mine Haulage

Letter No. 6—Kindly permit me to express my opinion in regard to the question raised by Charles F. Sherman, *Coal Age*, Nov. 27, p. 861, in reference to the tendency of a mine locomotive to lift at the front end when pulling a load.

This is a common occurrence with all electric locomotives of the four-wheel, two-armature type. Mr. Sherman is correct in believing that the load hauled acts with a leverage to lift the front end of the machine, the rear axle being the fulcrum. This has the effect to relieve the front wheels of some of the weight resting on them and causes them to spin, although the wheels may not be lifted clear of the rails.

Now, my idea is when a locomotive is hauling a trip of cars on a level track there is what I would call a line of pull extending from the rear car to the front of the locomotive. When the motor is pulling its maximum load this line of pull is a straight line that resists bending. Consequently when the front wheels of the motor approach a low joint in the track the straight-line pull tends to hold up the front end of the machine. In hauling a lighter load the drag or drawbar pull is less and there is not the same lifting tendency.

The best that can be done to avoid the trouble is to have the locomotive drawbar at the same height as the drawbar of the cars. To lower the drawbar of the locomotive as Mr. Sherman suggests would have the effect of reducing the tractive effort of the rear wheels and increasing that of the front wheels, without any gain. Assuming that the locomotive is properly handled by an experienced motorman and that the load does not exceed the maximum haul, I would say the best remedy is to surface the track so there will be no low joints and all four wheels of the locomotive will bear equally on the track.

GEORGE COLE.

Donora, Pa.

Authority of Shotfirers

Letter No. 2—Referring to the inquiry of "Shotfirer," Nortonville, Ky., *Coal Age*, Jan. 1, p. 26, relative to the authority of shotfirers, allow me to express the opinion that it is the height of folly for any mine committee or miner to arbitrarily question or condemn the practice of the shotfirer, whose action based on his judgment and experience concerns not only his own life, but the lives of all the employees in that mine. The shotfirer is held responsible by the state and by the company who employ him for the safety of the men working the mine. It is his responsibility alone, and any damage or disaster resulting from the unwarranted interference of the mine committee would mean but little to the committee.

The laws of many states protect the shotfirer in his extremely hazardous work, and give the competent man supreme authority to exercise his own judgment in the performance of his duties, in the belief that the minimum of risk is thereby taken by all the employees of the mine. The state has defined the qualifications of the shotfirer and, without question, his competency as well as his duties should be judged by a higher court than that of the mine committee.

FOOLISH OPPOSITION TO AUTHORITY

A miner would be very officious to attempt to supersede the authority of a shotfirer, fireboss or any other mine official, or to disregard the injunctions of the Bureau of Mines, which may cause some little inconvenience to the miners because of certain enforced practices that insure the greatest amount of protection to the health and lives of the workmen. No committee or miner can afford to be pig-headed or arbitrary with a shotfirer or other mine or state official, because it would only expose the objector to ridicule and lessen his chances of securing a hearing for his alleged grievances.

Placing one's self in contempt of the law does not make the authorities more kindly disposed toward a person, and no self-respecting and progressive shotfirer, who is fair enough to listen to reason, will be moved or bullied by the threats and demands of the miners bent on following the practice offering the least exertion, regardless of safety.

CAUSES OF FAILURES IN SHOOTING

Assuming that black powder is in use, if a good grade of stiff paper is employed a sufficiently long cartridge can be made up, and it will be rarely necessary to make two sticks or more. It is bad practice to use newspaper or other soft paper, in making up even a short cartridge, as the powder will easily cause the stick to bulge or break, in ramming the charge back to the end of the hole, and scatter the powder along the length of the hole. The charge is also liable to stick in the hole, making it both dangerous to tamp and to fire, besides lowering the force and efficiency of the shot.

In my own personal experience in shooting with black or permissible powders and using two or more sticks, I have rarely failed to have them all explode at the same time. When that was not the case, I attributed the failure to lack of care in preparing the sticks or inserting them, or tamping the hole. If the hole is thoroughly cleaned and the sticks all tamped back to the end of the hole, the chief source of failure is eliminated.

In the use of permissible powders, many failures are due to leaving the powder inside the mine till it has absorbed much moisture, or to the detonators being likewise affected. Few failures of the sticks not all

going off at the same time have ever occurred in my experience, unless an extremely poor grade of permissible explosive was used. It is sometimes possible that one will get a poor quality of powder from even the best of the powder manufacturers, and this may be a fifty-pound box that has, perhaps, been damaged by moisture, in shipment or in storage.

In the case of the mine committee's contention, cited by the correspondent writing from Nortonville, it is probable that everybody else concerned would be willing to have the State Department of Mines decide the issue. If the Department of Mines decides that it is a safe practice to tamp holes with loose powder or open cartridges, this should be considered the last word. However, it is very unlikely that the State will sanction a recommendation that places in jeopardy the lives of its miners, and especially the lives of the shotfirers, in order to gratify a whim containing no more merit than an occasional shot failure, perhaps due to another cause having no connection with the point in dispute.

Thomas, W. Va.

MINE WORKER.

Unaccountable Explosion

Letter No. 1—No doubt many readers will be deeply interested in the account given by "Superintendent," describing an explosion that occurred under mysterious circumstances, in a mine at Buffalo, Ohio. It is stated that the mine was working the Upper Freeport seam of coal, in the Cambridge district; and the explosion occurred in a room where the pillar was being drawn by machine. A short time before the explosion occurred, the place had been examined and reported as "free from gas," by the fireboss.

Without going into the technicalities of the question, it can be said that similar trouble has been experienced by many mining men working under like conditions. The incident related serves a double purpose, however, since it emphasizes the danger that arises when undercutting coal with machines, besides suggesting the fact, often overlooked, that gas will frequently be produced in large volume through the cutting of a clay vein.

The fact is well known that coal-cutting machines make large quantities of fine dust, which renders the work of mining with machines more dangerous than pick mining, unless due precautions are taken to clean up the places and load out the fine cuttings as they are made. It is evident to any practical man that the condition surrounding the drawing of pillars with machines are such as to invite just such an explosion as this, described by "Superintendent."

For the sake of illustration, let me assume a mine having a pillar section where the coal has been worked all around, by rooms and headings. We will suppose that some gas is given off from the floor of the seam, but the circulation when driving the rooms was such that open lights have been used without danger. When the work of drawing back the pillars in this section is commenced, machines being used for the purpose, there will naturally be large quantities of fine dust produced and much of this dust will be found floating in the mine air.

Under conditions such as these it is quite possible that the air charged with gas and dust would be ignited on the open lights of the machinemen and, once ignited, the presence of the dust will certainly cause a violent explosion and produce the effect mentioned in this

inquiry. The danger, in that case, would be all the greater if the machine should chance to cut a vein or fissure that gives off a fresh quantity of gas.

It is common, in mining practice, to find mines that have always been and are still considered as "free from gas," because they do not generate gas in sufficient quantity to be detected by a safety lamp. In many of these mines, it is possible to ignite the gas, however, by bringing a naked light close to a fissure coming from the bottom coal or from the floor of the seam.

Nevertheless, the gas rising diffuses rapidly into the air and gives little or no trouble in the working of the seam, provided the circulation is sufficient to dilute and carry away the gas generated. Mines such as these make the judgment of practical mining men often of more value than the results of the chemist in his laboratory. They are conditions that must be viewed from a practical standpoint.

In my experience, I have frequently been in places where it was possible to pass along the rib of a room and ignite small jets of gas coming from the seams in the coal, and yet no standing gas could be found at the face of such rooms, owing to the rapid diffusion of the gas into the air current, which made the use of open lights quite safe in those places. I have no fear but that many of my fellow mine officials will bear me out, by recalling similar experiences of their own. It will be interesting to learn of these conditions, which throw light on many unaccountable occurrences.

Where gas is generated in the floor of a seam, the use of electric coal cutters should be discouraged, as affording a dangerous element that is liable to cause the ignition of the gas before it has had an opportunity to diffuse into the air. The presence of the fine dust produced by the machines makes this danger all the greater.

It is also worthy of consideration that a sudden in-burst of gas may have occurred due to a recent gob fall releasing some pent up gas in the abandoned area, with the result that it was ignited when the machinemen entered the place holding their lights down near the floor. There would seem to be no proof, in the account given, that this place was not filled with gas; and it may be wrong to assume that the gas ignited was accumulated at the floor of the workings.

Perryopolis, Pa.

ROBERT W. LIGHTBURN.

Effect of Wire Gauze on Flame

Letter No. 1—The effect of the wire gauze, which is one of the essential parts in a mine safety lamp and furnishes the needed protection when the lamp is surrounded by an inflammable or explosive mixture of gas and air, is a question that always creates much interest in the minds of young men studying the science of mining.

In the anthracite mine foremen's examination, *Coal Age*, Dec. 11, p. 902, the following question is asked:

Are there any conditions under which the flame will pass through the gauze of a safety lamp?

In many of these examinations for mine foremen and firebosses, the question is asked:

What prevents the passage of flame from within the lamp to the outer gaseous atmosphere?

It is usually explained that the cooling effect of the wire gauze lowers the temperature of the gas burning within the gauze chimney and extinguishes its flame, as the gas passes out through the mesh. As stated

in the answer given in *Coal Age*, however, "flame will pass through the gauze when the wire has become heated."

It must be remembered that there is an appreciable amount of space between the cool wire of the gauze and the flaming gas. This is due to the absorption of the heat from the film of gas-charged air in immediate proximity to the gauze, owing to the lower temperature of the wire. It is this absorption of heat by the wire that cools the gas close to it so that its temperature is too low for burning.

After many experiences, Sir Humphry Davy found that a wire-gauze mesh, consisting of 28 wires crossed by 28 wires and making 784 holes or apertures to the square inch, was best suited for the purpose of a safety lamp. The fact that, today, 100 years later, the same mesh is the approved standard in safety-lamp construction, in this country and in England, shows how well and carefully he performed his work.

The size of the wire forming the mesh recommended by Davy is No. 28 B.w.g., which has a diameter of 0.014 in. A little calculation shows that this standard mesh provides an area of opening of 21.6 per cent, and 78.4 per cent of the mesh is solid metal. The air required to support the combustion of the flame of the lamp must enter through these small openings in the mesh of the gauze.

In the accompanying figure, I have attempted to show one of the effects of the entering air on the air within the chimney of the lamp. This air is not only charged with the products of combustion of the lamp flame; but it contains, besides, whatever gas is in the air surrounding the lamp and fed into the combustion chamber. As indicated in the figure, each little streamlet of entering air pierces the inside atmosphere like an arrow.

The practical effect of these entering darts of air is to pierce and cool the heated atmosphere of gas within the gauze and which may be flaming or ready to burst into flame. Thus, in immediate proximity to the gauze, the inner atmosphere presents a saw-tooth surface, which is the effect of the entering jets of air. The general effect is to increase the cooling power of the gauze and lower the temperature of the atmosphere in contact with it.

As the action and reaction progresses, there will be little bursts of flame that die out almost as quickly as they form, unless the lamp is exposed for too long a time to the gas-charged air surrounding it. In that case the effectiveness of the gauze and the entering air jets to prevent the passage of flame through the mesh is greatly reduced, until a temperature is finally reached at which they offer no resistance at all.

The cooling effect of metal on flame is clearly illustrated in the use that many firebosses make of the lamp pricker when making a test for gas. After lowering the flame as far as possible without extinguishing it, there

is still a small bright yellow spot at its base, the light from which interferes with the ready observation of the flame cap.

In order to eliminate this bright spot, the fireboss pulls down the pricker of his lamp into the flame, until it rests on the wick or nearly so. The effect of doing this is to cool the temperature of the flame, so that the bright spot disappears and in its place is a non-luminous and hotter flame for testing. I should state that the temperature of ignition for methane is 1212 deg. F., and ignition of this gas only takes place when this temperature is reached and maintained for an appreciable period of time. The ignition of the gas is not instantaneous.

R. Z. VIRGIN, Asst. Professor of Mining,
Carnegie Institute of Technology.

Pittsburgh, Pa.

Co-operation Among Mine Officials

Letter No. 4.—I have read with much interest the letter of James Touhey, which appeared in *Coal Age*, Dec. 11, p. 900, regarding the need of co-operation among mine officials. Co-operation among the officials themselves and co-operation between the officials and their men are urgent factors where the best results are to be obtained.

Close practical interest is demanded of every unit where smooth running of the organization is desired. While this is needed today more than ever before, it has always been a recognized fact in the past that earnest co-operation is most fruitful of results. On the other hand, the marked absence of co-operation in an organization is harmful and disruptive, as it breeds distrust, fear, suspicion and contempt of one party or faction for the other.

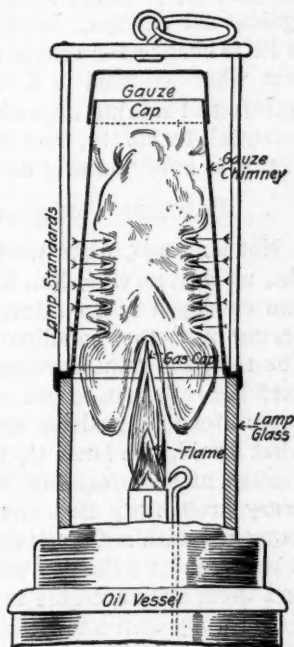
Harmony, understanding and even sympathy sometimes mean more than anything else in the building up of an organization so efficient that it is practically immune to attack from radicalism and labor unrest. We can nearly always trace the absence of co-operation to the absence of a mutual understanding, or an unwillingness or aloofness and, later, open hostility, which is shared alike between the employer and employee.

CO-OPERATION NO BAR TO MINE DISCIPLINE

It is not necessary to confuse co-operation, with a leniency that breeds disorder in an intelligent system of discipline, through a laxity of authority that eventually defeats its own purpose. Intelligent discipline is always impossible without co-operation. For the enforcement of discipline, there must always be respect for authority and officials must create that respect if they are to retain their authority.

Beginning with one of the boon principles of co-operation a mine official should be able to readily mingle and mix with his employees, in order that he may at once disarm them of any suspicion or distrust. This is not possible when an official holds himself aloof from his men.

Some officials feel themselves so far superior to their employees that they consider it highly discreditable to their station to be even in close enough touch with them to properly perform the duties of their office. It would be well for such to remember that a certain familiarity does not breed contempt; but builds the foundation for a good strong organization and creates a uniform respect for discipline and authority.



It is a good habit, and one that is easily acquired, to speak to everybody, and to encourage and help those who are doing good work. Poor workers, not inherently so, have often become good or fair workers under proper handling. Nevertheless, if a man is a part of the human driftwood and will not or cannot work, he can be released without a verbal explosion, which only makes him worse and more vindictive than ever and his next employer finds him of little use and again he goes away with the feeling that he would like to tear everyone to pieces.

RIDDING THE MINE OF INDIFFERENT WORKERS WITHOUT INCURRING THEIR ILLWILL

There is a way of discharging a man and still retaining his good will. Some officials have the faculty of discharging an unsatisfactory employee and making him feel that he is doing him a great favor. I have worked in mines where the miners were lax and careless in setting timbers and there was little discipline. Explosives were scattered around loose; the rooms were driven wide and off the points; and other flagrant violations of the law were observable.

I have listened to mine foremen fume, fuss and threaten their men in a manner that it seemed sure the men would lose their jobs and be sent to jail the next minute; but, in each such case, I have failed to notice that it brought about any improvement in conditions. On the other hand I have gone into mines where the foremen manifested good fellowship and mixed with and encouraged their men. In these mines, it was noticeable that but few if any violations of law and bad conditions were found.

It is a wise foreman that will say, "Mike, here, will never get his head cracked. His place will be timbered right to the minute when he gets this one set," at the same time indicating with a piece of chalk where a prop should have been set. In response, Mike would explain the reason for his neglect and proceed to set the post at once. A good foreman will always find a pleasing and conciliating way of calling men's attention to a breach of discipline. Such a foreman's organization is the acme of co-operation and efficiency, and represents the achievement of the highest possible results.

Thomas, W. Va.

EFFICIENT.

Finding a Mine Door Set Open

Letter No. 20—I have followed this discussion closely and have wondered at the many different opinions in regard to an open trapdoor. After something like 30 years' experience in mining, I am led to condemn in the severest terms the general use of doors in mines.

It has often been a wonder to me how a mine door came to be called a "trap." There is no doubt in my mind, however, but that the name originated from the fact that all such doors are real "traps" and are certain to cause injury or death to someone, sooner or later. I only wish I could give statistics that would show a true record of the injuries and death of men, boys and animals, and the number of explosions caused by these doors. It is claimed that we have reached the progressive age in mining, and yet this discussion shows that the majority of mining men have little inclination to do away with this source of danger in mines.

Let me say, briefly, in reference to the points in question, that the only safe way for a fireboss to proceed, on

finding a mine door set open when starting his examination, is to return at once to the surface and, taking with him a competent man and breathing apparatus for their protection, proceed to examine the section for the purpose of ascertaining if there is any fire burning therein. Then, return and close the door if everything is found to be safe. I would suggest that the fireboss write the word "danger" on the door and ask the foreman to have the door taken out and an overcast built or the circulation arranged so as to avoid the need of a door.

Regarding the other points in question, allow me to remark that a fireboss should never start to examine his section at the return end. There should be no need of giving a reason for this statement when one recalls the deadly effect of carbon monoxide or even blackdamp that may be present in the return air. Consider, for a moment, the danger that would arise if there was methane present in the air.

Even assuming that the fireboss carried only his safety lamp, he runs a risk of having it extinguished in the gas, or, possibly, igniting the gas when proceeding against the current. With his lamp extinguished, there is little chance for escape to fresh air. It would seem that what we need is a wider spread of the practical training of mining men along these lines, which are so essential to safety, and this training should be conducted in every mining district in the country.

PRACTICE CONDEMNED ANGERS FOREMAN

Not long ago, when working for the Inland Collieries Co., at Harmarville, Pa., I condemned much of the system employed in the mine, in respect to trapdoors, timbering and the handling of locomotives in haulage. For this, the mine foreman called me a "meddler" and used his influence to get me out of the mine. But, the superintendent realized that there was much truth in what I said. He knew that, some time before, I had left a mine after informing the mine boss that there was every probability that the place would blow up, which happened within a week after my leaving. Fortunately, it occurred on a Sunday when few men were in the mine and these we were able to rescue.

From my own knowledge, the past year has recorded many casualties as the result of trapdoors, poor timbering, improper systems of haulage and other details of mining. It is my belief that these accidents could be largely avoided by the proper education and training of all men in charge of underground work. Too often it happens that a long established custom results in disaster, because no one has dared to say that it was unsafe. For example, the hauling of powder in a mine car attached to a mantrip, as was the case in the accident at Wilkes-Barre, not long ago.

In closing, let me urge that the trapdoor will only cease to be a source of danger in mining when it is kept out of the mine. There is no economy in its use; on the other hand, it is a source of expense. The only way to get rid of a bad habit is to quit it, and my answer to this discussion is, to do away with the use of a trapdoor.

C. W. ATKINS.

Kyle, Pa.

[This letter will close the discussion "Finding a Mine Door Set Open."—Editor.]

[Contributors sending type-written copy should make it double-space to permit of editing.—EDITOR.]



INQUIRIES OF GENERAL INTEREST

ANSWERED BY JAMES T. BEARD



Shifting the Worker

An incident occurred not long ago, in connection with my work, and I would like to have the views of others in regard to the treatment I received at that time, at the hands of the mine superintendent. In this narration, I will endeavor to be as brief as possible and yet give the facts necessary to enable a just opinion. They are as follows:

An experience of 12 years, working at various jobs in and around coal mines, had enabled me to do almost anything required in the mine. At the time to which I refer, I was operating a substation and received a small salary, which was less than I could make at other work. For this reason, I wanted a change that would take me into the mines. As a motorman or a shotfirer I could make more money. For five years, I had filled the position of motorboss in another mine, but had been only a short time in my present position at the substation.

Knowing of my desire for other work, the mine electrician dropped into the station one morning and told me he had a job for me that would give me better pay. The work was bonding track with an arc welder. It was then Sunday morning and he told me he would like me to report for work Tuesday morning. I replied, "All right, I will see the boss tomorrow and get a transfer if he will give it to me."

The following morning, Monday, I got the nightman to stay in my place while I went to the superintendent's office. Finding the superintendent at his desk, I stated the case to him, explaining my desire for other work and better pay and asked him for a transfer. I explained that I had a large family and could not support them on the small salary of \$110 a month. The job that had been offered me by the mine electrician paid 69c. an hour, which would mean an increase of at least \$30 a month in my pay.

The superintendent began to curse and swear. He said, "I will not do any such d— thing," and asked, "What will you do if I do not transfer you? It is against the rules of the company for a man to leave one department, for work in another." To this I replied, "I can get better work and more money by going to another company." The result was that the superintendent gave orders to the mine electrician that he was not to employ me on his work, and I quit the company and secured a position as shotfirer at another mine, although it put me to the expense of moving.

My own thought regarding this incident is about as follows: As superintendent of a mine and having one of the men apply to me for a transfer, under similar conditions, I would have answered him, "Well, I haven't got anyone to fill your place; but you stay on a day or two, until I can get a man, and I will see the electrician and have him hold the job for you, as I am glad that you can earn more money in another place." It will

be interesting to learn the views of others, some of whom may have had like experiences with mine.

Fleming, Ky.

A. H.

This is a fair question that will without doubt find an echo in the experiences of many ambitious and hard-working men, who are filling temporary places in hopes of being soon transferred to positions they are fitted to fill. *Coal Age* believes that men always make better and more efficient workers when employed at tasks to their liking and for which they are fitted. At the same time, all cannot be firebosses, or motormen or drivers. It is up to the worker to earn his advancement. Let us hear from many on this point.

Supporting Roof, Pittsburgh Seam

In view of the growing scarcity of mine timber, to which attention has frequently been called in *Coal Age*, it seems to me that it is not amiss to ask for the views of practical men in regard to methods that can be adopted for supporting the roof in mine workings when the time comes that the supply of props and other timber for this purpose fails.

In my opinion, this is a situation that we must all face sooner or later. It is particularly true of mining operations in the Pittsburgh district. As one who is deeply interested in the problem, I want to ask for the views of *Coal Age* and its readers. I would suggest that the discussion have particular application to the Pittsburgh thin vein and the Pittsburgh thick vein, both of which are under practically the same cover. The height of the coal in the two seams is, say 6 and 9 ft., respectively. The question is, how can the roof be supported, in working these seams, without the use of timber?

Perryopolis, Pa.

INQUIRER.

This is certainly a timely subject for discussion. In some mining districts, the scarcity of timber is becoming acute. In numerous instances, operators of large mines, in districts where the timber supply has become depleted, have already resorted to the use of iron supports, consisting of T-iron and channel bars of specified sizes and dimensions.

This method of supporting mine roof has been called "steel timbering," and has given much success in its application. One of the chief points to be considered in steel timbering, is a suitable form of joint that will permit such frames or sets to be readily placed in position and taken down and moved when needed elsewhere. Steel timbering will also call for special consideration in order to give ample footrest where the bottom is soft, and to protect the metal from corrosion.

Coal Age will be glad to receive the views and suggestions of practical readers, many of whom have had valuable experience in this line.



EXAMINATION QUESTIONS

ANSWERED BY
JAMES T. BEARD



Miscellaneous Questions

(Answered by Request)

Ques.—What quantity of water will a double-acting pump deliver if the plunger of the pump is 4 in. in diameter and the piston speed 100 ft. per min.?

Ans.—The diameter of the plunger being 4 in., its sectional area is $0.7854 \times 4^2 = 12.566$ sq.in. The piston speed being 100 ft. per min., the plunger displacement is $12.566(100 \times 12) \div 231 = 65.28$ gal. per min. Now, allowing a water-end efficiency of 85 per cent, the quantity of water delivered by this pump would be $0.85 \times 65.28 =$ say, $55\frac{1}{2}$ gal. per min.

Ques.—With 3 hp. we are producing 25,000 cu.ft. of air per minute; how many horsepower will be required to produce 60,000 cu. ft. per min., in the same airway?

Ans.—Disregarding any difference there may be in the efficiencies of the ventilators, the power producing circulation will vary as the cube of the quantity of air circulated, in the same airway. In other words, the power ratio will equal the cube of the quantity ratio. Hence, calling the required horsepower x , we have,

$$\frac{x}{3} = \left(\frac{60,000}{25,000}\right)^3 = \left(\frac{12}{5}\right)^3 = 2.4^3 = 13.824$$

$$x = 3 \times 13.824 = 41.472 \text{ hp.}$$

Ques.—What are the advantages of a double over a single hoisting engine?

Ans.—A double or duplex engine has two cylinders connected with crankarms set at right angles to each other on the drumshaft. The advantage of this arrangement is that the engine is never on dead center, but is always able to start its load in any position of the crankarms.

Ques.—With a water gage of 5 in., we are producing 50,000 cu. ft. of air per minute; what will a 9-in. water gage produce in the same mine?

Ans.—Assuming that there is no change in the circulation of the air or in other conditions in the mine, the quantity of air in circulation will vary as the square root of the pressure or water gage. In other words, the quantity ratio is then equal to the square root of the water-gage ratio. Hence, calling the required volume of air x , we have,

$$\frac{x}{50,000} = \sqrt{\frac{9}{5}} = \sqrt{1.8} = 1.34$$

$$x = 50,000 \times 1.34 = 67,000 \text{ cu. ft. per min.}$$

Ques.—(a) If a pressure of 2 lb. per sq. ft. produces a velocity of 200 ft. per min. in an airway, what pressure will be required to produce a velocity of 400 ft. per min., in the same airway? (b) What pressure will produce a velocity of 600 ft. per min., in the same airway?

Ans.—(a) The pressure producing circulation, in a given airway, varies as the square of the velocity. To double the velocity in the same airway, therefore, will

require four times the pressure; or, in this case, $4 \times 2 = 8$ lb. per sq. ft.

(b) To increase the velocity three times will require $3 \times 3 = 9$ times the pressure; or, in this case, $9 \times 2 = 18$ lb. per sq. ft.

Ques.—A cross-entry that was driven up from a main entry having caved in, it was decided not to clean up the cross-entry, but to start a road 300 ft. back on the main entry in a direction to strike the cross-entry 800 ft. in from its mouth. Using a tape for that purpose, how can sights be given on the entry for driving this cutoff?

Ans.—Assuming that the cross-entry runs at right angles to the main entry, the cutoff when driven will form the hypotenuse of a right triangle whose two sides are 800 and 300 ft., respectively. The direction for driving the cutoff, starting at a point 300 ft. back from the mouth of the cross-entry, on the main entry, can be indicated by drawing a right triangle on the roof at that point. The shorter side of this triangle must correspond to the direction of the main entry and the longer side be at right angles to it. The ratio of these two sides is 300:800, or 3:8. That is to say, for every 3 in. on the line parallel to the main entry, 8 in. must be measured on the line at right angles to it. The line joining the extremities of these two measurements, or the hypotenuse of the right triangle, will indicate the direction for driving the cutoff.

Ques.—An airway 4,500 ft. long, 4 ft. 3 in. high, and 9 ft. 3 in. wide, is passing 54,500 cu. ft. of air per minute; what is the velocity of the current?

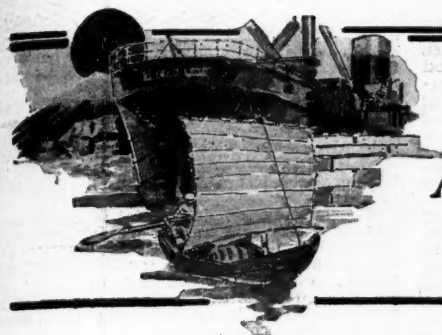
Ans.—The sectional area of this airway is $4.25 \times 9.25 = 39.3125$ sq.ft. The velocity of the air current at the point where these measurements were taken is, therefore, $54,500 \div 39.3125 = 1386\frac{1}{2}$ ft. per min.

Ques.—Explain the formula, $pa = ksv^2$.

Ans.—This is the formula for calculating the total resistance ($R = pa$) in an airway where the rubbing surface is s and the velocity of the air current v . In the formula, k is the unit of resistance, or the resistance offered by 1 sq. ft. of rubbing surface to an air current having a velocity of 1 ft. per min. The resistance varies with the square of the velocity. Therefore, multiplying the unit resistance (k) by the rubbing surface (s) and that product by the square of the velocity (v^2) gives the total resistance or total pressure concerned in moving the air through the airway.

Correction

The last two lines of the first paragraph of the answer to the first question, *Coal Age*, Jan. 29, p. 246, should read: the assumed velocity of the air current $450 \times 100 \div (100 - 3) = 463.9$ ft. per min. Then, the last two lines of the following paragraph would read: the quantity of air passing is $72 \times 463.9 = 33,400$ cu.ft. per min.



FOREIGN MARKETS AND EXPORT NEWS



Wasteful Methods of Working in India

A report has been made by Mr. Treharne Rees to the Secretary of State for India on the working of the Indian coal mines. He has made a survey in accordance with the suggestion of the Industrial Commission, with a view to introducing economies in mining methods. Mr. Rees, who is a partner in Messrs. Forster Brown and Rees, of Victoria Street, London, S. W., comes to the conclusion that one-third of the coal in Indian mines is being lost, owing to bad methods of working, and that three-quarters of a million tons are lost annually by wasteful power working of the collieries.

He notes the absence of supervision, such as inspection by agents of land owners or by Government officials to prevent wasteful methods of working, and the lack of covenants to work economically and guard property for the future. The result has been that in a large number of properties the colliery has been worked chiefly with the object of producing outputs at the earliest possible moment, without due consideration being given to the most efficient methods of laying out collieries for the future.

The waste is abnormally high, and he concludes that the quantity of coal destroyed or lost by present methods is not less than one-third of the total amount in situ. The longwall system is generally unsuitable, while in thinner seams coal-cutting and coal conveying machinery should be more widely introduced. The time has arrived when companies have to consider the winning of more valuable coal at greater depths. Sinkings are at present actually being made to win seams lying at varying depths of about 1,000 ft. Mr. Rees points out that over-pressure of superincumbent strata at these depths will make pillar working still more wasteful. In view of the comparatively shallow depths from which coal is at present won in the two main fields at short distances, he considers that the average annual consumption of fuel for producing power, more than 10 per cent of the total annual output, is excessive.

It should be reduced to not more than an average of 5 per cent by the application of electricity for winding, hauling, pumping, etc. Several of the larger companies have erected electric generating stations, and have effected thereby considerable economies. But steps should be taken to insure the more general use of electricity, and those companies whose mineral areas are too small to admit of the initial outlay necessary for individual generating plant should have facilities for obtaining suitable electrical power at reasonable rates for use at their mines.

A general survey should be made of the Jheriah and Raniganj coal fields, and central generating stations should be equipped on a large scale to centralize work as far as economically possible. The system in India is criticized under which the mine sidings are owned and maintained by railway companies and constructed mainly at their expense. The system prevents a colliery company, without permission of the owners of these connections, from obtaining access to another railway company's system, causing in some instances detour of traffic.

If the colliery companies owned their own branches, ran their own locomotives, and became responsible for any damage accruing to railway company's wagons while on colliery property, railway companies would be safeguarded and large quantities of coal would be liberated for working. Coal left for support of colliery branches would be reduced by these means, and also by the colliery companies centralizing their loading depots.

With the erection of central electrical

power stations there should be sufficient power not only for working collieries, but for conveying coal to central loading depots and electrifying railway sidings and branch lines within coal fields.

Most serious efforts should be made to increase the number and improve the type of wagons in the main coal fields. Mr. Rees proposes the setting up of a controlling authority to supervise negotiations for leases. To insure better supervision of coal extraction, he suggests that all coal when brought out of the mine should be weighed and an accurate account recorded in books at the colliery. The labor force is described as insufficient and unambitious. Methods are suggested for improving the conditions of labor, so as to settle non-fluctuating industrial populations near the mines.

He also recommends modern coking, the utilization of byproducts, and the manufacture of briquettes. He states that the introduction of hydraulic packing will increase the cost of production of coal from seams in which it is employed to the average extent of 1 rupee per ton.

Foreign Freight Rates

During the past week the market has softened considerably to all destinations outside of the West Indies. Many additional steamers were chartered to transport coal to ports in South America and Europe at very favorable rates and conditions, says W. W. Battle & Co.'s coal-trade report.

Because of the continued demand for coal in this country, the demands of the export shipper are not favorably met. A terrible storm such as occurred the past week was another hindrance in last week's shipping.

Export licenses are still very difficult to obtain. To West Indian ports the rates were firmer the latter part of last week owing to the report that licenses already issued would be withdrawn unless steamers were declared against these licenses.

Shipping Board rates by steam are as follows:

FOREIGN FREIGHT RATES

	Rate	Tons Displaced
Genoa/Leghorn.....	\$26.50	1,000
Spezia/Savona.....	26.50	1,000
Piraeus.....	28.50	1,000
Trieste/Venice.....	31.00	800
Algiers.....	26.00	800
Cadiz/Bilbao.....	23.50	1,000
Barcelona.....	26.00	1,000
Antwerp/Rotterdam.....	22.50	1,000
Lisbon.....	22.50	1,000
Gothenburg.....	24.00	1,000
Marseilles.....	26.00	1,000
Stockholm.....	26.00	800
Hamburg.....	25.00	1,000
Rouen.....	23.00	1,000
Malmo.....	25.00	800
Pernambuco.....	16.00	500
Bahia.....	16.00	500
Rio.....	17.00	1,000
Santos.....	18.50	600
Rio Grande do Sul.....	19.50	500
Buenos Aires or.....	16.00	1,000
La Plata or.....	or	
Montevideo.....	17.50	750
Rosario.....	19.00	750
Bahia Blanca.....	17.50	1,000
Havana.....	7.50	600
Sagua.....	9.00	300
Cienfuegos.....	9.00	500
Cardenas.....	9.00	300
Caibarien.....	9.50	300
Guantanamo.....	9.50	300
Manzanillo.....	9.50	300
Bermuda.....	9.00	300
Bermuda p. c. and s. free		
Kingston.....	9.50	400
St. Lucia.....	11.00	500
Barbados.....	11.00	500
Santiago.....	8.50	500
Port of Spain, Trin.....	9.00	400
Curacao.....	11.00	500
Free p. c. Curacao	10.50	500
Demerara.....	13.00	400
St. Thomas.....	10.00	500
Nitrate Range.....	12.00	500

All above rates gross form charter.

Holland's Coal Imports Increased

Holland's consumption of coal has constantly increased during the past years, states a recent report of the Geological Survey. In 1901 about 5,000,000 tons sufficed; in 1905 over 6,000,000 tons were consumed; in 1913 about 10,000,000 tons were required, and this figure is now accepted as the normal requirement of the country. Of this amount approximately 8,500,000 tons were imported bituminous and 1,500,000 tons were anthracite, practically all the latter being home production.

The normal consumption of coal, in tons per annum, was distributed approximately as follows:

Railroads.....	1,200,000
Bunkers in Dutch ports.....	1,200,000
Gas factories.....	1,500,000
Other uses.....	6,100,000
Total.....	10,000,000

The following table indicates the net imports of coal into Holland. Germany supplied much the greater part of these imports, approximately 70 per cent coming from that country just before the war. England supplied about 20 per cent, and about 10 per cent was credited to Belgium.

MONTHLY IMPORTATION OF COAL INTO HOLLAND FOR NINE MONTHS, BEGINNING OCTOBER, 1917

Coal, Lignite and Briquets	1917, Oct.	1917, Nov.	1917, Dec.	1918, Jan.	1918, Feb.	1918, Mar.	1918, Apr.	1918, May	1918, June
Germany.....	116,252	255,521	195,512	285,698	201,285	191,039	49,705	3,637	14,385
Belgium.....	5,047	961	303	20	191	288	8,937	595	328
Great Britain.....	15,111	34,394	19,636	35,891	28,713	10,277	1,272	1,742	
United States.....							110		
Total.....	136,410	290,876	215,451	321,609	230,189	201,604	60,024	5,974	14,713

COAL SITUATION IN HOLLAND, 1912-1918

	1912	1913	1914	1915	1916	1917	1918, Jan.-June
Total net imports....	7,432,596	8,264,029	7,334,207	6,712,334	5,597,748	2,603,353	788,822
Domestic production..	1,680,146	1,744,140	1,929,000	2,862,000	2,586,280	3,018,726	1,707,352
Total available for consumption....	9,112,742	10,008,169	9,263,207	9,574,334	8,184,028	5,622,079	2,496,174

Nova Scotia Coal Co. Acquires Another Company

The official announcement is made of the acquirement of control of the Acadia Coal Co. by the Nova Scotia Steel and Coal Co. During the administration of the Belgian interests, which the Scotia people have now taken over, the property of the Acadia coal field was more thoroughly and more scientifically prospected than it had ever been previously, and the Belgian management did unusually good work in a coal field of extraordinary complexity.

The number of coal seams already proved in the Stellarton area controlled by the Acadia Coal Co. is 16, but there is very reasonable possibility that others may be encountered at lower depths. Another undeveloped asset of this field is the oil shales and oil coals which are associated with the coal seams in much profusion. The Stellar, or oil coal seam (from which the town of Stellarton receives its name) is a case in point.

English Premier Meets Miners' Committee

The Parliamentary committee of the Trade Union Congress and the executive committee of the Miners Federation will be received by Premier Lloyd George tomorrow, states the *Sun* and *New York Herald* dated Feb. 4, and will ask for the nationalization of the mines, railways, shipping, shipbuilding and other key industries covered by the resolutions of the Glasgow conference, which was called to discuss the high cost of living and electoral reform.

In the miners' case nationalization would eliminate 1,500 colliery owners and 400 royalty owners, and the mines could be worked on a basis of wholehearted co-operation by both technical and manual workers and greater productive efficiency could be brought about.

In coalition circles it is believed the Prime Minister will reply to the delegates that the Government has no intention of adopting nationalization and will announce his readiness to introduce legislation insuring that the workers shall have a share in the control of industry and a share in the profits based on actual production. It is expected the committee will refuse this offer pending a decision by the Trade Union Congress on Feb. 28, and at the same time will demand an increase in wages of \$1.25 a day. The trend of feeling in railway circles indicates that the men are not satisfied with the recent settlement, and already the lodges are discussing the possibilities of new demands, the chief of which will be the immediate nationalization of the railways.

Full Industrial Demand in Scotland

The effect of the holidays has practically worn off, states a recent report in the *Colliery Guardian* and business is once again very active. Industrial demands are pretty full. Household requests are very large, but unfortunately supplies are limited, and great difficulty is experienced in meeting ration allowances. Fair shipments are going to Irish ports, chiefly of industrial qualities, consignments of house coal being very small. A fair amount of foreign business is in the market and Allied orders too are pressing.

The clearances during the past week, however, were almost entirely eastwise. Ell coal and splint are very busy and still realize about 86s. and 90s. neutral, and 76s. and 72s. allied respectively, with treble nuts 78s. 6d. neutral, and 65s. Allied f.o.b. Glasgow. Shipments amounted to 61,961 tons, against 55,287 in the preceding week, and 46,209 tons in the same week last year.

With a Government-fixed price on a much higher level there is every inducement for operators to withhold deliveries on contracts and to the best of their ability take care of orders on which the prescribed price can be charged. In many instances the railroads are insisting upon their full requirements before cars are placed for other buyers, this under threat of not hauling the cars away, and in still other cases cars are supplied only for railroad fuel. The whole railroad-coal situation is certainly in bad shape, and because of this a large number of consumers in this territory are utterly unable to count upon any current receipts all-rail or by rail to the Tidewater ports.

The sustained cold weather through most of January has also upset many plans. More coal was burned than it was expected would be required and together with confiscations and generally light shipments there is slightly less complacency among buyers than was the case a month ago. Stocks are being gradually depleted, but there is nothing like the alarm among industrial steam users that is so evident among railroad fuel agents.

There are quiet efforts to secure spot coal, in some cases to replace contract shipments that have been confiscated, and in still other cases, usually of small plants, there is threatened distress, but on the whole there is even now surprisingly little snap to inquiry.

At the New York and Philadelphia piers there are only small tonnages available. Confiscations have been general and shippers of low volatile coal who were hoping to profit by the premium allowed for export coal are now obliged to bill to the railroads at the Government price.

English Colliery Deputies Discuss Grievances

Important matters were discussed in London at the Coal Mines Production Department on Wednesday affecting the wages and hours of colliery officials, states the *Colliery Guardian*, when a deputation of the Federation of Colliery Firement, Deputies, and Examiners of Great Britain waited upon the Coal Controller's representatives. The questions in dispute related to the demands of deputies employed in collieries at Yorkshire in respect to the hours of their working shifts.

The Controller's representatives promised to give the case their immediate attention. The demands of the Yorkshire deputies, if sanctioned, will mean an increase of 1s. 6d. a day upon base rates, which would thereby cover the additional working time involved by the present effect on hours.

Hull Coal Trade for December

Figures which have been extracted from the statement compiled by the Hull Chamber of Commerce and Shipping, from a return made by the coal inspector to the Corporation, W. Herbert Truman, state that during the closing month of last year 236,955 tons of coal were consigned to Hull from the collieries, as compared with 177,402 tons in December, 1918. Of this amount, 226,732 tons were transported by rail and 10,223 tons by river. The total quantity imported into Hull during the completed year ending Dec. 31 was 2,101,648 tons, as against 2,605,602 tons in 1918. The totals for the last 12 years were as follows:

Year	Via River	Via Railway	Total
1908	665,256	5,241,624	5,906,880
1909	633,608	5,467,032	6,100,640
1910	539,368	6,335,784	6,875,152
1911	522,392	5,933,592	6,455,984
1912	462,636	6,549,342	7,011,978
1913	517,488	7,428,477	7,945,965
1914	431,944	5,220,689	5,652,633
1915	261,346	4,406,387	4,667,733
1916	217,849	3,072,432	3,290,281
1917	195,431	2,616,925	2,812,356
1918	160,930	2,444,672	2,605,602
1919	164,080	1,937,568	2,101,648

Swiss Coal Situation Improved

During the month of November, 1919, states Trade Commissioner H. Lawrence Groves, Geneva, in *Commerce Reports*, the importations of coal into Switzerland, and the sources from which it came, were as follows: 17,262 tons from the basin of the Saar; 14,577 tons from the basin of the Ruhr, of which 11,464 tons came in under the 6-months' coal agreement that is now in operation between Switzerland and Germany; 3,779 tons from the basin of the Rhine; 16,712 tons from Belgium, 7,349 tons from France, 13,689 tons from England, and 89,934 tons from the United States. The total for the month was 163,302 tons. In the corresponding month of 1918 the imports were only 79,188 tons.

The notable increase has been brought about largely by the shipments from the United States, but, in spite of the recent availability of American coal for the first 11 months of 1919, the imports were only

2,468,135 tons, according to the information which has just appeared in the Swiss press, as against 2,103,915 tons for the corresponding period in 1918.

However, the coal situation in Switzerland appears to be better than in any of the neighboring countries, and, with the continuation of the present rate of importation the country should be able to get through the winter without serious difficulties.

The supply of industrial coal appears sufficient to avoid any cause for immediate alarm. The greatest shortage appears in the quantities available for household purposes; but the rationing of coal was abandoned some months ago, and there appears to be no immediate need or prospect for reviving this system.

General License for England's Exports Issued

The English Board of Trade announces that, with a view to the decentralization of coal export control, an open general license has been issued, with effect from Thursday, Jan. 1, 1920, states the *Colliery Guardian*, permitting the export of coal, coke and manufactured fuel to all destinations abroad except Russia, Germany, Hungary, Austria, Turkey, and Bulgaria, subject always to the approval, previously obtained, of the Controller of Coal Mines, or his duly authorized representative, and subject to shipment being made in a vessel approved by the Commissioners of Customs and Excise or their officers.

The Customs authorities will require pre-entry to be made in all cases; and at ports where there is a duly authorized local representative of the Controller of Coal Mines, the approval referred to above will be signified by his indorsement on the pre-entry form, which must be presented to him for the purpose, before shipment.

Where shipment is proposed to be made from a port not included in the list given, it will be necessary for application for the Controller's approval to be made to the Export Branch of the Coal Mines Department in London. Similarly, shipments from all ports in the United Kingdom to the destinations excluded from the purview of the general license must still be covered by an export license from the Coal Mines Department.

German Troops Check Miners' Strike

The expected strike this week in the coal regions has been prevented by the strategy of the Government, which moved large numbers of troops to the neighborhood of the mines with orders to arrest immediately any workman who attempted to lay down his tools at the end of the six-hour work shift, for which the miners were to strike.

All the railroad shops also have reopened on a piece work basis after the lockout, and the Government reports that work is progressing peacefully.

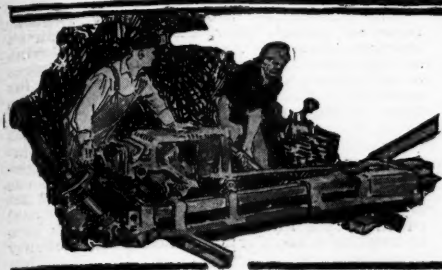
Coinciding with this announcement *Zeitung am Mittag* declares that the exceptional measures of the Government while they may be toned down somewhat, will remain in force until the elections. The right of public meeting will be extended within certain limits, and suppression of the press will be only for a defined period.

Danish Coal Imports

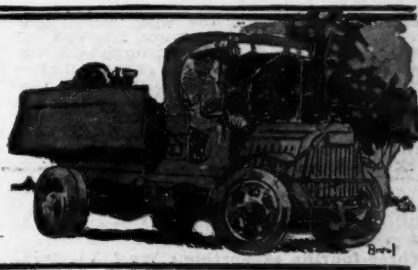
In times of peace Denmark obtained most of its coal and coke from the United Kingdom. The difficulties of ocean transportation made it necessary to import coal from Germany. This explains the enormous increase from \$2,520,000 to \$27,599,000 in the imports of "Coal and other raw minerals." In 1913 Denmark imported from Germany only 362,920 metric tons of coal, coke, briquets, and cinders, valued at \$2,000,000; in 1917 these imports aggregated 1,257,467 metric tons, valued at \$25,844,000.

French Coal Situation

Coal shortage remains acute in France. The great rains have caused water transport to be almost impossible, and railway transport has not improved. Among other impediments is a combined strike, states a recent report in the *Colliery Guardian*, of the peniche owners and of the tugboat mechanics which has started at Rouen, which is full of coal.



COAL AND COKE NEWS



Charleston, W. Va.

Greater car shortage on Chesapeake & Ohio than any other road in the state. Few mines operate more than two days in the last week in January. Embargoes removed. Car shortage most acute in Kanawha field; production for last week of January only 60,000 tons. General strike in New River field materially reduces output of coal. Strike to force return of "check-off" system.

While car service on the Chesapeake & Ohio had been extremely poor throughout the earlier weeks of January, it was worse by far during the last week of that month than at any other time not only during January but in recent months. The supply on Monday, Jan. 26, was far below the usual Monday supply so that it was not surprising, during the remainder of the week, to observe quite a serious shortage of equipment. Less than half enough cars were furnished, in fact, for mines on the Chesapeake & Ohio in this territory, the supply averaging not more than 25 per cent during the last three days of the month.

So far as it was possible to determine, the Chesapeake & Ohio had less cars available for coal loading than any other road operating in the state, even though there was also a shortage on other lines. On branch lines the supply of cars fell as low as 26 per cent, according to authentic reports. Under such conditions few mines were able to operate more than two days out of the week, so that the output of fields in this part of West Virginia fell below 50 per cent of capacity. Weather conditions were far more conducive to larger loadings and to the better movement of loads and empties than during the previous week. Despite such improvement in the weather, however, there was little or no improvement in service, motive power continuing to be far short of requirements.

Embargoes in force earlier in the month had been removed by the beginning of the last week of January and had there been a larger production there would have been a heavier Western tonnage. The curtailed production also had the effect of decreasing export shipments.

Production in the Kanawha region, during the week ended Jan. 31, was seriously crippled through a shortage of empties, as acute as has been witnessed at any time since the severe weather of 1917-18, mines without number throughout the region finding it necessary to suspend operations because of absence of loading facilities. Few if any mines in the field were operated more than two days out of the six. Toward the latter part of the week not more than 10,000 or 11,000 tons of coal were being loaded per day in the entire Kanawha field. It is estimated in fact that production for the entire six days did not reach more than 60,000 tons.

In some parts of the region the supply was as low as 25 per cent. The situation has become so serious, in fact, in the Kanawha as well as in other regions, that traffic managers are being employed with a view to going into the subject of car supply more thoroughly and finding out just what the trouble is.

Under date of Jan. 26, notice was received in the Kanawha field that exports, in so far as that field was concerned, would be allowed only where shippers could show that boats would be available by a certain time after shipments were made. That of course tended to cut down the export tonnage.

Between a serious shortage of cars and a general strike in the New River field, affecting 26 different operations at one time, during the final week of January, production was materially reduced in the region mentioned. Of course with a strike in effect at a number of mines, the need for cars was not so pressing as it would have been had all mines been in operation. Production was limited to about 90,000 tons. With exports still limited, more New River coal was finding its way westward

than is usually the case when the movement of such coal is unrestricted. The New River field was affected to some extent also by inadequate motive power. The strike in this field during the early part of the week affected only three mines. However the middle of the week found at least 16 operations affected, and by the end of the week the number had grown to 26. The strike was preconcerted and a part of an effort of the leaders in District 29 to force a return of the "check-off" system of some of the New River operators. District officials of the United Mine Workers were unable to induce a general walk-out in the field.

Bluefield, W. Va.

Last week of January brings improved car supply in southern West Virginia. Norfolk & Western only road here showing improvement. John L. Lewis determines to organize non-union fields here. Virginian Ry. mines work 3½ days and Chesapeake & Ohio mines two days a week. Winding Gulf feels shortage; Tug River and Pocahontas fields increase output.

In a part of the smokeless and high-volatile areas of southern West Virginia, there was a slight improvement as compared with conditions during the week ended Jan. 24, the last week of January bringing a somewhat better car supply at least at Norfolk & Western mines. That appeared to be the only road reaching into the coal regions in the lower part of the state where there was any improvement, however, and production continued to be far below normal even on the Norfolk & Western.

Usually cars are less plentiful during the last half of the week than earlier in that period, but in that respect conditions were reversed, as January came to a close, in southern sections, loadings being nearer normal in several fields during the last three days; the car supply, in fact, being not far short of normal on one of those days. Weather conditions, for one thing, were more favorable to the movement of traffic and the Norfolk & Western was better able to accept empties from western connections at junction points previously congested.

Coal men in the southern part of the state were considerably interested in the expressed determination of acting President John L. Lewis to organize all non-union fields in southern West Virginia. Mr. Lewis was in Bluefield during the last two days of January.

Severe blows were dealt the mining industry in the Winding Gulf field during the final week of January owing to the scarcity of empties in the field. Insofar as the Virginian Ry. was concerned, that road was able to furnish only enough empties to keep mines on its line in operation for 3½ days during the week. Conditions were even worse at Chesapeake & Ohio mines, operations on that road averaging only two working days out of the six. In other words Virginian mines were operating on about half time and Chesapeake & Ohio mines on one-third time. Such a curtailed car supply made serious inroads on the tonnage shipped from the Winding Gulf region and had pretty well taken the starch out of the industry in that particular district, companies being utterly unable to take advantage of present market opportunities, either at home or abroad.

While the output of the Tug River field was increased during the week ended Jan. 31, the increase was slight, only 61,700 net tons being produced. In other words the mines of this field were only mining about two-thirds of capacity, working on an average of only four days a week. Such conditions are not only injuring operators financially but are creating a spirit of unrest among the miners, and operators find it difficult to understand why there should be any shortage, in view of the fact that congestion has been relieved, unless it is

that the coal cars are being used for storage purposes and that there is indiscriminate diversion. Not only are export shipments limited by the curtailed tonnage, but it is impossible to keep up with contract requirements.

The curve of production in the Pocahontas field was upward during the last week of January, mines in that field loading 295,540 tons or about 40,000 tons more than during the week ended the twenty-fourth; yet the failure of the Norfolk & Western to supply an adequate number of cars was responsible for the loss of 132,000 tons, a reduction, however, of about 50,000 tons in the loss as compared with that of the preceding week. During the first few days of February, mines were only operating on a half-time basis, since mines were able to secure only about half enough cars. The coke production in the Pocahontas region was somewhat in excess of the previous week, the tonnage of coal coked amounting to 14,000. Up until the end of January influenza had not been prevalent enough to interfere with the mining of coal.

Huntington, W. Va.

Absurdly low tonnage for Logan field in last week of January. Similar shortage in Guyan production. Logan operators' commission goes to Washington to secure relief from Railroad Administration. Chesapeake & Ohio weekly movement of cars.

While the mines of Logan field managed to produce 13,000 more tons of coal during the final week of January than during the previous week, yet the output was still short of 50 per cent of capacity, reaching only a total of 145,000 tons; this tonnage is absurdly low for the Logan region where the average output during the strike, for instance, was nearly 250,000 tons a week. The best index to conditions in the Guyan field, however, was found in the increasing loss from car shortage, a total of 236,000 tons having been lost from that cause alone—an increase of 32,000 tons.

Thus it will be seen that the car shortage in the Guyan field was most grave and was playing havoc with mining conditions in that field. At no time during the week was that maximum production over 30,000 tons a day. During the last two days of the week the output was less than half of the figures just given. As the shortage grew worse and worse, a hurry-up call was sent out to the operators and a special committee of Logan operators was sent to Washington to secure some relief from the Railroad Administration; the committee made the complaint that although mines west of the Ohio River were receiving a fairly adequate supply, as shown by Geological Survey reports, yet Chesapeake & Ohio mines were limited to less than a half supply. Some assurances of relief were given, but the committee was not very hopeful of any improvement in the transportation situation.

There was an unusually heavy demand for Logan coal and for gas coal especially, but the supply was so disproportionate to the demand that producers were utterly unable to even keep up with contract deliveries. The continued shortage is playing havoc with their business, not to speak of creating dissatisfaction among the miners, and some connection is seen by operators between the pronounced car shortage in non-union fields and the campaign about to be launched for the organization of such fields.

Another index to curtailed production was furnished in the weekly movement of cars on the Chesapeake & Ohio system, only 9,087 cars of coal having been handled on the whole system during the last week of January against 9,543 during the previous week; this represents a decrease of 456 cars, the decrease in tonnage—22,800 tons—being the difference between 477,150 and

454,350 tons. During the week ended the twenty-fifth, 6,072 loads were handled by the Chesapeake & Ohio through Clifton Forge, Va., for the East, the eastern movement representing about two-thirds of the total tonnage handled. The average eastern movement for each day of the week mentioned was 867 as compared with 664 cars per day average during the same week of 1919.

Fairmont, W. Va.

Three-fourths of northern West Virginia mines idle during some days of last week of month. Acute car shortage. Some mines operated only two full days out of ten. Most of northern West Virginia coal going east. Coal sent to New England by rail.

The end of January in northern West Virginia mining fields witnessed one of the worst car shortages since the winter of 1917-18, with the supply running as low at times during the week as 25 per cent, so that there were days during the final week of the month when fully three-fourths of the mines in northern West Virginia were not in operation. The only day during this period, in fact, when there was anything like an adequate supply was on Monday, Jan. 26, when cars furnished were equal to about 85 per cent of requirements. There was a drop from that figure to about 25 per cent, that representing the average for the remainder of the month. Late placements tended to further curtail production.

While the scarcity of cars was most marked throughout the final six days of January, the twenty-eighth was probably the worst day in the week, there being only a little more than 400 cars available, for instance, in the Fairmont region on that date, with about 1,600 ordered. The shortage on that date resulted in a suspension of operations at 132 mines. A large number of mines were also closed down because of no cars on each of the last three days of the month. Weather conditions were in nowise responsible for the inadequate supply since exceedingly mild weather prevailed throughout the week.

On nearly all other roads operating in northern West Virginia, the shortage of cars was equally serious. The supply sank as low as ten per cent on the Monongahela R.R. at one period during the week. Consequently there was a general reduction in the output throughout all northern fields. Cars were so scarce that, for one mine of a company able to operate, there were several of the same company in complete idleness. In some instances mines were not able to operate more than two full days out of ten, and such a situation was causing much unrest among miners as well as demoralizing mining conditions generally.

The eastern movement of coal from northern West Virginia regions far outstripped the tonnage going west. Ohio and Michigan sections were the principal points of Western consignment. Railroads in the East, in so far as it was possible to tell, were not taking as heavy a tonnage as they had earlier in the month. There was also a material decrease in Curtis Bay shipments, but the fact that coal for New England and other Eastern points is now being shipped by rail alone may have had something to do with that. A somewhat larger wagon-mine tonnage than usual was reported.

Ashland, Ky.

January production for northeastern Kentucky only 40 per cent. Loss of output due to car shortage. Big Sandy and Guyan operators go to Washington to learn cause of shortage. Other districts favored with cars. The reason given and operators assured of improvement in supply. Future export business promises well. Labor plentiful, assuring large output when railroad conditions are normal.

Production in the northeastern Kentucky district during the week ended Jan. 31—reaching only 91,730 tons—fell behind production for the same week of 1919 (112,070 tons) when "no market" was seriously curtailing the output. During the month just ended the output in this district was 520,605 tons, or a decline of 53,000 tons, as compared with the same month of 1919. With production reaching only 40 per cent of capacity during the last week of the month, it follows that there was a loss of 60 per cent or 137,095 tons. Nearly all of such loss (131,220 tons), representing 58 per cent, was due to a car shortage.

During January the loss from a car shortage amounted to almost 500,000 tons,

so that the situation has become quite serious in this field. During the week ended Jan. 31, there were 470 mine days when no cars were supplied; that meaning a loss of 112,500 tons. In other words, out of a total of 153 mines in the district, which during the week would have worked 918 days, 470 mine days were lost because of no cars; the loss figures being augmented because of the fact that other mines received less than their full supply on some days. As a whole, there was less than an average of 2½ working days for all the mines during the week.

When the Geological Survey reported the production (for the week ended Jan. 17) for the entire country, as the largest production for any week in January during the last three years, the operators along the Chesapeake & Ohio (getting only 50 per cent supply) became quite agitated with the thought that other districts were being favored in the supply of cars from the pool. On short notice, therefore, a delegation of Big Sandy and Guyan operators hurried to Washington to ascertain, if possible, the reasons for this apparent preferred treatment. The Car Service section of the Railroad Administration frankly admitted the inability of the lines serving the eastern coal fields to handle the cars offered them at the important junction points and, when this condition continued indefinitely, the idle cars awaiting delivery to the eastern lines were diverted to the more western coal fields close at hand. This enabled the miners in the western and southern fields to work almost to maximum capacity, bringing about quite a marked increase in production in those fields.

Severe winter weather was mainly responsible for the railroad deficiencies and now, with a return to a normal temperature, the railroads are feeling the serious effects from the inroads of the influenza epidemic. Assurances were given the delegation of Chesapeake & Ohio operators that, if favorable weather continues, improvement in the car supply would result and that the Car Service section was exerting every effort to supply the eastern railroads to their fullest capacity to handle, hoping in a short time to make the present disparity in the relative supply between the western and eastern fields a thing of the past.

Other radical steps are being taken to further improve the supply along the Chesapeake & Ohio by the addition of extra equipment from the anthracite railroads in the North and the several railroad lines in the South. With such assurances as have already been mentioned a more optimistic view immediately became manifest and it was decided to watch carefully any changes which might occur.

Considerable activity on the part of consumers for their next year's requirements has been noticed in the northeast Kentucky field, at prices ranging close to the present Government price and continuing the usual labor clauses covering any increased cost resulting from an increased wage scale. Requests for quotations on export business are almost a daily occurrence, and the shippers are anticipating quite a heavy movement from the northeast Kentucky district to Charleston, S. C., immediately after the Lever Act is nullified and tide-water embargoes lifted. It is safe to assume that quite little if any tonnage, other than the usual current tonnage reserved by the operators, will remain uncontracted for by March first, to begin with the usual time of contracts on April first.

The mines are reporting the best complement of labor in their history and, once the railroads experience a return to their normal performances, quite large production increases will immediately result. Very little fear is felt by the shippers in this field on an overproduction for some time as, even though the mines were able to increase their production, it is safe to assume that the railroads will be prevented from handling any greater tonnage than the normal 12,000,000-ton average per week and, with stocks almost entirely depleted and the opening of the Lake season near at hand, together with the great export tonnage, it will be some time before the consuming trade begins to catch up with its usual normal supply.

Louisville, Ky.

Coal-production tax bills brought up in Kentucky Legislature. Details of bill introduced by Assemblyman Beckman. Includes tax for state and county purposes. State Tax Commission proposed. Comment of state press on coal-production tax. How the coal-tax matter stands in other coal states. Kentucky operators expect to see measure defeated.

Bill introduced into Kentucky Legislature to amend law relating to miner's checkweighman. Affects mines employing as many as 20 men. Duties and privileges of checkweighman noted. Methods of his payment. No interference with his rights. Fine in case of violation of act.

Assemblyman Beckman quite recently introduced a bill into the Kentucky Legislature whose purpose is to impose a license on any person, firm, corporation or association engaged in the mining of coal in the state and authorizing counties also to impose a tax for road, school and county purposes.

This bill aims to provide that every person, firm, corporation or association engaged in the business of mining coal in the state shall, in lieu of all other taxes imposed by law, annually pay a tax for the right or privilege of engaging in such business in the state of 1c. per ton on all coal mined in the state, and this tax shall be for state purposes. In addition any county in the state may impose a like tax of 1c. per ton for road purposes, county purposes or school purposes on all coal mined in such county, and the Fiscal Court of any county may levy the tax for county purposes, determining what fund or funds shall receive the taxes when collected; when coal is mined in any separate taxing district in a county, the Fiscal Court shall equitably distribute such taxes between the county and such taxing district.

Those mining coal in the state within the meaning of this act shall make a report to the State Tax Commission on July 1, 1920, and every three months thereafter, showing the number of tons of coal mined during the previous three months and the mine from which it was taken. All such reports are to be made upon blanks prescribed and furnished by the State Tax Commission. Failure to make such a report within 30 days after it is due, on conviction, is punishable by a fine of \$50 for each day thereafter the report is not made.

The bill provides that the State Tax Commission shall determine the correct number of tons of coal mined in any county in the state, by any person, firm, corporation or association, from the date this act goes into effect until the day on which the first report is required to be made, and thereafter from the day on which the last report was made until the day when the next report is required to be made. The Commission shall certify as to the correctness of this report to the County Court clerk of the county in which such coal was mined, within ten days after the correct number of tons of coal has been finally ascertained.

All taxes due under the provisions of this act shall be payable 30 days after notice has been given by the State Tax Commission, and all taxes due to any county shall be payable 30 days after the certification is made to the County Court clerk. Failure to pay such taxes, after receiving 30 days' notice, imposes upon the delinquent a penalty of ten per cent on the amount of the tax, and thereafter such tax shall bear interest at the rate of ten per cent per annum. All such state taxes shall be paid to the state treasurer, and all county taxes to the sheriff or collector. The reports giving the correct number of tons of coal mined shall be made by the various companies through their chief engineer or other agent in the state and shall be duly verified.

The introduction of this bill renews the old fight for the tonnage tax on coal and considerable discussion has been aroused over the matter. In his message to the Legislature, Governor Morrow asked for a production tax on oil and gas but not on coal. It has been said that the tonnage tax on coal was not asked for because the competing states of Pennsylvania, Tennessee, Indiana and West Virginia do not tax their coal interests, except nominally; and that for Kentucky to take such action would be to put coal operators at a disadvantage in a strong competitive market. The coal-tennage tax matter has been thoroughly thrashed out in Alabama, where a 2-cent production tax on coal was enacted into law last year. References to this matter appeared in the July 31, Aug. 14 and Aug. 28, 1919, issues of *Coal Age*. The question of a production tax on coal was also brought up in the Pennsylvania Legislature within the last six months.

Other coal production-tax bills have been introduced in the Kentucky Legislature and some of the newspapers of the state are advocating that positive action be taken. The *Louisville Times* suggests that the governors of the coal-producing states arrange for representatives of their respective tax departments meeting and drawing

up a uniform bill, which will affect all operators in all of the coal states alike.

The Kentucky operators have defeated several similar attempts to force a legislative act to place a production tax on coal mined in the state. It is said that they have been successful in the past due to the fact that such taxation was not in effect in other states and would work a hardship on operators. The operators seem to be solidly arrayed against this bill and plan to make every effort to defeat it in the Legislature. In the case of the Alabama coal tax, the governor of that state included it among the state administration measures and was said to be largely responsible for its enactment into law against strong opposition. On the other hand Governor Morrow of Kentucky does not seem to favor the introduction of such a tax measure in the Legislature of his state.

Assemblyman McCandless recently introduced a bill in the Kentucky Legislature to amend and re-enact Section 2733-A of Carroll's 1909 Edition of Kentucky Statutes. The bill was referred to the committee on Mines and Mining.

Paragraph 1 is amended and re-enacted to read substantially as follows: That when a majority of the miners engaged in digging or mining coal at any mine in this state (Kentucky) at which as many as 20 men are employed request the owner or operator of such mine to allow the miners to employ, at their own expense, a person to inspect the scales at the mine and to see that the coal dug by the miners is properly weighed and accounted for, and perform such other duties as will assist in bringing about correct weighing, the owner or operator is to permit such a person to be employed by the miners making the request, and it shall be the duty of the owner or operator to permit the weighman selected to deduct his wages from the miners each day upon the proper sheet, to turn this coal sheet into the company's pay-roll clerk and receive his pay in the same manner as any other employee of the company; provided the person so employed has an honest and trustworthy reputation and also that he is an employee of the owner or operator at the time of his selection as set forth. This weighman chosen by the miners is to hold his office for a period of three months or until his successor is elected and qualified, and the appointment, under the provisions of this act, of each inspector and assistant weighman shall be approved by the Judge of the County Court of the county wherein the same is made.

Paragraph 2 states that the person appointed and employed by miners to perform the duties noted in paragraph 1 shall at all times have free access to the scales at the mines and shall not be hindered or prevented from a proper performance of his duties by the person who weighs coal for the owner or operator of any mines, nor any of the agents or employees of the operator. On the other hand the miner's checkweighman shall in no way prevent the weighman or other employees of the owner or operator from performing their duties in a proper manner.

Paragraph 3 notes that any person violating any of the provisions of this act shall be fined not less than \$10 nor more than \$50, and each day on which any of the provisions of this act are violated shall constitute a separate offense.

Norton, Va.

Virginia fields produce 176,000 tons of coal in last week of January. Gain of 9,000 tons. Labor more plentiful than cars. Large export tonnage.

Production in the Virginia fields during the last week of January amounted to 87 per cent as against an 85 per cent output for the preceding week; the total output advancing from 168,000 to 176,000 tons, a gain of 9,000 tons. The production loss during the week ended the thirty-first was 31,000 tons. The entire loss followed in the wake of a car shortage, the labor supply having been such as to have been conducive to a 100 per cent production. Since radical agitators were weeded out of the Virginia fields, miners have been extremely regular in their work.

As was the case during the previous week, there continued to be a large volume of tonnage for export through Charleston, S. C., and through Norfolk, Va., the demand far outstripping the supply, in fact, as was also the case with reference to the domestic demand.

PENNSYLVANIA

Anthracite

Pottsville—Prospects are bright, it is said, that the entire anthracite coal region will be working on a daylight-saving plan in the spring. Under the leadership of Mayor F. P. Mortimer, Council was asked to indorse the proposition. Council unanimously acquiesced in the plan and the coal companies will work in harmony with the proposition to move the hands of all clocks forward one hour on the last Sunday in March. The big repair shops of the Philadelphia & Reading Coal & Iron Co. and the Eastern Steel Co.'s works will be operated under the plan.

Jeddo—Highland No. 5, Jeddo No. 4 and Ebervale mines of the G. B. Markle Co., north of Hazleton, are still idle, due to the nonrenewal of the lease of these lands, which are owned by the Union Improvement Co., of Philadelphia. Employment agents are working among the idle Markle employees, and are inducing many to leave for work in steel mills. The Freeland and Hazleton Chamber of Commerce, in separate resolutions, asked Attorney General Palmer to use his office in getting the idle Markle mines in operation.

Bituminous

Indiana—Judge J. N. Langham has appointed D. J. Jones, of Ernest, Pa., as the miners' representative on the mine foremen's examining board of the Twenty-Fifth Bituminous district. He succeeds J. R. Balls, of Ernest, resigned. The other board members are, W. B. Wardrop, of Iselin, representative of the operators, and Thomas S. Lowther, inspector of the district.

Pittsburgh—Thomas K. Adams, of Mercer, Pa., president of the Pennsylvania Bituminous Mine Inspectors' Advisory Association, has called a meeting of all the bituminous mine inspectors of the state, together with the other members of the mine foreman's examining boards, to be held at the Seventh Avenue Hotel here on Friday, March 5. The meeting promises to be attended by about one hundred mining men. The purpose of the meeting is to set the dates for the annual mine foremen's and fire bosses' examinations and to discuss the questions which will be asked the candidates.

Rosster—The new repair shop of the Clearfield Bituminous Coal Corporation, here, has been completed. It is said that it will be one of the most modern mine repair shops in central Pennsylvania and will include repair departments for electrical machinery and section for the building of mine cars. A large blacksmith shop is in one section and a modern store room in another part. One end is devoted to a large office for the mine foremen of the three Rosster mines, each foreman having his own compartment. The building is of fire-proof construction and is 60 x 160 ft. The sides are practically all glass and the window frames are of steel.

Coming Meetings

Material Handling Machinery Manufacturers' Association has changed the date of its convention from Jan. 29 and 30 to Feb. 26 and 27, at the Waldorf-Astoria Hotel, New York City. Secretary, Z. W. Carter, 35 West 39th St., New York City.

Canadian Mining Institute will hold its annual meeting at the King Edward Hotel, Toronto, Ontario, Canada, on March 8, 9 and 10, 1920. Secretary, H. Mortimer-Lamb, 503 Drummond Building, Montreal, Quebec, Canada.

New York State Retail Coal Merchants Association will hold its annual meeting Feb. 26, at the Pennsylvania Hotel, New York City. Executive secretary, G. W. Woodside, Albany, N. Y.

American Institute of Mining and Metallurgical Engineers will hold its annual meeting Feb. 16, 17, 18 and 19, at the Engineering Societies Building, 29 West 39th St., New York City. Secretary, Bradley Stoughton, Engineering Societies Building, New York City.

American Chemical Society will hold its annual meeting at St. Louis, Mo., April 13, 14, 15 and 16. Secretary, Dr. Charles L. Parsons, 1709 G St. N. W., Washington, District of Columbia.

New England Dealers' Association will hold its annual meeting March 24 and 25, at Springfield, Mass. President, W. A. Clark, 141 Milk St., Boston, Mass.

North Western Pennsylvania Coal Operators' Association annual meeting will be held at Butler, Pa., March 2. Secretary, F. B. Reimann, Butler, Pa.

National Coal Association annual convention will be held May 19, location to be decided later. Secretary, W. B. Reed, Commercial Bank Building, Washington, District of Columbia.

American Wood Preservers' Association will hold its annual meeting Feb. 16, 17 and 18 at Chicago, Ill.

American Concrete Institute will hold its annual meeting Feb. 16, 17 and 18 at Chicago, Ill. Secretary, Henry B. Alvord, 6 Beacon St., Boston, Mass.

Trade Catalogs

Catalogue 53. The American Pulverizer Co., St. Louis, Mo. pp. 16; 8½ x 11½ in.; illustrated. A description of the pulverizing and grinding machinery made by this company.

Blawforms. The Blaw-Knox Co., Pittsburgh, Pa. Folder. Pp. 4; 3½ x 6½ in.; illustrated. Gives a brief idea of the extent to which Blaw steel forms are being and can be used in connection with concrete construction.

Mine Car Lubrication. Standard Oil Co. (Indiana), Chicago, Ill. Bulletin. Pp. 15; 6 x 9 in.; illustrated. This bulletin points out losses in coal transportation from the face to the tippie and also methods of eliminating such losses.

Handbook of the I. T. E. Circuit Breaker. The Cutter Electrical & Manufacturing Co., Philadelphia, Pa. Series M. Pp. 263; 6½ x 9 in.; illustrated. Bound in cloth and marginal indexed. Printed on coated paper and well illustrated. Complete information for prospective customers.

Worthington Condensing Apparatus. Worthington Pump & Machinery Corp., New York, N. Y. Pp. 116; 6 x 9 in.; illustrated. Information about the various condensers made by the company together with useful information on condensation. Printed on heavy coated stock.

W-C-K City. Westinghouse, Church, Kerr & Co., Inc., 37 Wall St., New York, N. Y. Folder. pp. 4; 15 x 21 in.; illustrated. Half of the folder presents a large group of buildings erected by the company giving the appearance of a city. General data about the work here illustrated.

Evans Scraper Loading Apparatus for Loading Coal into Mine Cars. Engineering Development Co. of America, Scranton, Pa. Bulletin 1. Pp. 12; 8½ x 12 in.; illustrated. Describes the method of scraper loading and illustrates by photographs taken in the mine. List of parts given and illustrated.

Recent Coal Washing Plants. The Roberts & Schaefer Co., Chicago, Ill. Bulletin 36. Pp. 26; 8½ x 11 in.; illustrated. Description of some of the recent coal-washing plants designed by the Roberts & Schaefer Co. for the preparation of coal for coking, domestic-fuel and railroad-fuel requirements.

Harris Electric Mine Pump Bulletin. Harris Pump & Supply Co., Pittsburgh, Pa. Pp. 114; 8½ x 11; illustrated. Bulletin 400. Illustrates and describes completely the various pumps handled by the Harris company; also pipe, valves and fittings for mines and other requirements. This bulletin is a valuable guide as well as catalogue.

Saving Fuel Automatically and Scientifically in the Boiler Room. The Northern Equipment Co., Erie, Pa. Booklet. Pp. 24; 5½ x 8½ in.; illustrated. A digest of some of the data prepared for the U. S. Fuel Administration during the war, together with comments by the technical press and mechanical engineers on hand and mechanical feeding and mechanical regulation.

Engines and Equipment. Ideal Engine Co., Lansing, Mich. Catalogue 719. Pp. 40; 6 x 9 in.; illustrated. Description of the Ideal type of gasoline engines in their several sizes, also ideal equipment for contractors and industrial plants.

Brown Pyrometers. The Brown Instrument Co., Philadelphia, Pa. Catalogue 12. Pp. 88; 8 x 10½ in.; illustrated. This catalogue is elaborately illustrated on heavy coated paper and contains much "real meat" on the subject of pyrometry. Thousands of dollars worth of work is turned out of furnaces and kilns the quality and spoilage of which is dependent upon the accuracy of pyrometer readings. The Brown instruments indicate and record temperatures; over 20,000 Brown pyrometers are said to be in successful operation.

Industrial News

Williamson, W. Va.—The Himler Coal Co. has completed the work of sinking a shaft near Warfield, Ky., and is producing coal although a bridge across Tug River has not so far been completed. In the meantime the coal is being stocked and the company is now engaged in work on a slope.

Sullivan, Ind.—R. E. Price, acting as agent for the Mutual Coal Co., of Dugger, has purchased the Keeley mine from the Dugger State Bank and John E. Griffith and has leased 200 more acres of coal land, which should make the mine a producer for 12 to 15 years. Work of cleaning up preparatory to driving new entries will start at once.

Peoria, Ill.—An agreement involving a consideration of \$150,000 and the transfer of 1,132 acres of coal lands in Peoria County, Ill., has been filed. John A. Hoffman, of Kickapoo Township, transferred the lands to Frank L. Bunn, of Bloomington, Ill., under an agreement whereby Mr. Bunn will serve as agent for Mr. Hoffman in selling the properties to parties who desire to develop the coal lands.

Princeton, W. Va.—The Virginian Ry. expects shortly to open bids for the construction of about 14½ miles of branch railroad up Millam Fork in Wyoming County, W. Va. This branch line will be known as the Virginian-Wyoming R.R.—a branch of the Virginian. It will open up a large territory of smokeless coal which is under the control of Godfrey Himes, of Boston.

Pittsburgh, Pa.—The American Blower Co.'s Pittsburgh branch announces that the office here is now under the joint management of Thomas Chester and Edwin C. Evans. The former has been with the company for 12 years including six as chief engineer; Mr. Evans has been in the service of the American company for 15 years. The Sirocco and Ventura mine fans are made by the American Blower Co.

Morgantown, W. Va.—According to information received here, the Connellsville Coke Co. has purchased 210 acres of coal land in Redstone township of Fayette County, Pa., from the Republic-Connellsville Coke Co., the consideration being (it is understood) \$454,500. It is also reported here that the Consolidated Coke Co. has sold to J. H. Hill, Jr., 110 acres of coal land in Nicholson and German townships of Fayette County, for a consideration of \$99,000.

Elkins, W. Va.—The Brewer-Harrison Coal Co., which recently incorporated with a capital of \$125,000, has perfected its organization, and plans are being arranged for the development of properties located in Lewis County. It is proposed to install complete mining machinery and equipment, including mine cars, etc., as well as to construct a new tipples, to have an annual capacity of about 150,000 tons. W. W. Brewer, Beilington, W. Va., is president and manager.

Erie, Pa.—The Ball Engine Co., of this place, has distributed a large wall calendar which should be of considerable interest to those using steam shovels or contemplating engaging in this kind of work. The Ball Engine Co. makes the well known Erie type of steam and electric shovels, also railroad ditchers, locomotive cranes, drag-line excavators, etc., for contracting and general excavating requirements. The calendar shows a number of the types of shovels and apparatus made by this company.

Bethlehem, Pa.—The Bethlehem Fabricators, Inc., of this place, has distributed an unusually attractive calendar of interest to coal men. It is made of pressed steel and includes a good photographic reproduction of the Loree coal breaker, erected for the Hudson Coal Co., at Plymouth, Pa., in the northern anthracite field. The steel work for the breaker was designed, fabricated and erected by this company, within 82 days from the signing of the contract—a noteworthy feat. The calendar is 9 x 18 in. in size.

Newark, N. J.—The Hyatt Roller Bearing Co., of this place, announces that after 18 years of service with this company, B. G. Koether has been promoted to the vice-presidency of the organization. In a short time he will leave Detroit for Harrison, N. J., where he will have his headquarters as head of the entire sales and advertising departments of the company. Mr. Koether was assistant sales manager of the Hyatt company at Harrison when he was promoted to the position of sales manager ten years ago, at which time he went to Detroit to take up his new duties.

Towson Heights, Baltimore, Md.—The Black & Decker Mfg. Co. has further extended its permanent organization by the establishing of a branch office at 6523 Euclid Avenue, Cleveland Ohio. Garth A. Dodge, formerly connected with the Austin Co. at its Cleveland headquarters, has recently joined forces with Black & Decker in the capacity of branch manager for the states of Ohio and Indiana, and will be in charge of the Cleveland branch.

Ackerman, Miss.—The Mississippi Oil & Gas Co-operative Joint Stock Co., of this place, furnishes the following information. On Jan. 27, 1920, the company opened up a 4-ft. seam of coal by means of an inclined shaft 300 ft. long. The mines are at Ackerman, and the coal is of the semibituminous variety. The Mississippi company is now busily engaged sinking the shaft 200 ft. deeper to an underlying 7-ft. seam of coal which is said to rest on a floor of fine grindstone rock. The company holds more than 50,000 acres of territory underlaid with coal, iron ore and clays.

Pittsburgh, Pa.—The annual meeting of the stockholders of the Bostaph Coal Co. was held on Jan. 30, 1920, at the office of the company, First National Bank Building, Pittsburgh, and the following officers were elected: Luster L. Corbin, president; L. L. Carson, vice president; Adam W. Tritsch, treasurer; James G. Armstrong, secretary, and W. A. Libengood, superintendent. The Bostaph Coal Co. owns and operates an electrically-equipped coal mine at St. Petersburg, Clarion County, Pa., on the Butler-Kane branch of the Baltimore & Ohio, and produces a high grade of steam coal. The Weaver Coal Co., Inc., of Buffalo, N. Y., handles the output.

Pittsburgh, Pa.—The Iron-Trade Products Co., Farmers Bank Bldg., Pittsburgh, Pa., has increased its capital to \$200,000 to take care of its growing business. W. J. Strassburger remains president as heretofore, with the following elected to fill the other positions: J. L. Hukill, vice president; L. J. Adler, treasurer; E. M. Morgland, sales manager, steel department; E. E. Kitchen, sales manager, coal department. Mr. Kitchen was formerly car distributor for the Pennsylvania Lines, then with the Valley Camp Coal Co., and for the past four or five years with the Fort Pitt Coal & Coke Co., Pittsburgh, resigning his position as sales manager to come with the Iron Trades Products Co.

New York, N. Y.—A proposition to continue the Tidewater Coal Exchange which, it is reported, will be discontinued on March 1, when the railroads return to private ownership, was considered at the annual meeting of the Wholesale Coal Trade Association of New York, at the Whitehall Club, on Jan. 30. A tentative set of rules were considered. The committee of the association that studied the situation says that the exchange, in the nine months, February to October, inclusive, of last year (by reason of the facilities for exchanging coal in the pools) worked a saving in car demurrage of \$731,462 out of a total of \$1,263,218 demurrage. Figured on the individual shipper basis, it means an average saving of 11.3 c. per ton.

New York, N. Y.—The Steinmetz Motor Car Corp., with executive and sales offices in the Ziegler Bldg., here, has been chartered under the state laws of Maryland with a capital of \$2,000,000, to manufacture a new type of light weight electric delivery truck and an improved electric industrial car for use in manufacturing plants. Both cars are the invention of Dr. Charles P. Steinmetz, chief consulting engineer for the General Electric Co., of Schenectady, N. Y. Dr. Steinmetz will act as consulting engineer to the Steinmetz corporation and will also serve on its board of directors. The concern has acquired a manufacturing plant at Baltimore, Md. A. Robert Elmore is president; J. P. Story, vice-president; Nelson H. Truett, secretary and treasurer.

Huntington, W. Va.—A syndicate of Columbus, Ohio, capitalists have purchased the holdings of the Lynne Block Co. operating in the vicinity of East Lynne, Wayne County, W. Va., the price paid, it is understood, being \$100,000 in cash. The Lynne Block mines have been in operation for several years, there being about 500 acres in their holdings, underlaid with a six foot seam of coal. The officers of the Lynne Block company were, Dr. A. K. Kessler, president; L. P. Miller, vice president; M. J. Ferguson, treasurer; S. H. Bowman, secretary and Frank Bosley, general manager. The Columbus people who have acquired the Lynne holdings expect to install much additional machinery and to enlarge and improve the plant so as to materially increase its capacity.

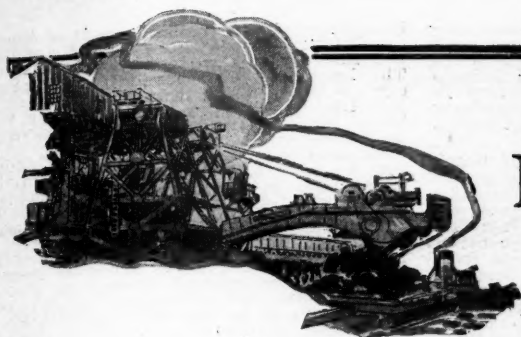
Beekley, W. Va.—The Crab Orchard Coal Co., opening up a property near here, will be in the market for supplies and equipment about March or April. The railroad siding to the mine will take 75-85 lb. rail and good second-hand material will be acceptable. Equipment needed includes mining machines, motors and mine cars. Rail for mine track will also be in demand. The company expects to buy electric power either from the Virginian or the Appalachian power companies and will erect a substation at the plant installing rotary converters. The capacity of the plant will be about 500 tons per day. Prince R. Lilly is the manager in charge of the work.

Beekley, W. Va.—Semi-official information is to the effect that the capital stock of the Inter-State Coal & Dock Co., of Chicago, will be much increased and that the company will handle a greatly increased tonnage hereafter, adding smokeless coal to the high-volatile product which the company has heretofore been handling. It is well understood that producers of the Winding Gulf and New River fields will become stockholders under the plan for an increase in capital. As a part of the company's plan for handling a heavier tonnage, branch offices will be opened at Beekley and at tidewater. The Inter-State company has large dock interests on the Lakes, and will now also engage in the export business and will be able under the new arrangement to handle about 2,500,000 tons of coal a year.

New York, N. Y.—At the annual meeting on Jan. 30, the following were elected members of the board of directors of the Wholesale Coal Trade Association of New York: C. Andrade, Jr., Matlack Coal & Iron Corporation; George M. Dexter, Dexter & Carpenter, Inc.; E. Kelley Downey, B. Nicoll & Co.; Wallace D. Eyre, Eyre Fuel Co.; E. W. Lewis, M. A. Hanna & Co.; Wilbur A. Marshall, (resigned—vacancy to be filled by W. A. Marshall & Co., Inc.); Charles A. Owen, Imperial Coal Corporation; Henry M. Payne, Bertha Coal Co.; Gardner Pattison, Pattison & Browns; Charles F. Randolph, Thorne, Neale & Co.; W. M. Woodward, Wentz Corporation. At the meeting of the new board of directors on Jan. 21, the following officers were elected: C. Andrade, Jr., president; Charles A. Owen, vice president; Henry M. Payne, treasurer; Charles S. Allen, secretary.

Huntington W. Va.—Having leased a large property in Dickinson County, Virginia the Virginian Elkhorn Byproduct Co. has been organized with a capital of \$300,000 to develop the acreage under lease. The new company has been fully financed by Huntington, W. Va., Pittsburgh, Pa., and Marietta, Ohio, men. The roster of officers includes: J. R. Slayton, president; J. F. Ratcliff, vice president; H. H. Morris, secretary; A. C. Thomas, treasurer; W. H. Cunningham, consulting engineer. On the board of directors are the above named officers and Samuel R. Upham of Pittsburgh; John McLeod of the Carnegie Steel Co., Pittsburgh; Forest Kyger, Marietta. The general offices of the company will be at Huntington. The company will begin construction work in the very near future on a large modern plant and will, in addition to the plant proper, erect a large number of houses for miners, a church, recreation hall, medical dispensary, etc. The company expects to be able to begin mining at an early date and to ship north and to the seaboard via the Carolina, Clinchfield & Ohio R.R.

Washington, D. C.—The appeal of the United States for the revival of certain indictments against J. V. Thompson, of Uniontown, Pa., which were quashed by the United States Court for the Western District of Pennsylvania, is being argued before the Supreme Court. The Government is represented by W. C. Herren, special assistant to the Attorney General, and Mr. Thompson by J. E. B. Cunningham, of Greensburg, Pa.; W. C. McKean, of Uniontown, Pa., and Robert Gibson, of Pittsburgh, Pa. It is now currently reported that Mr. Thompson himself is the principal in the Piedmont Coal Co., which some time ago purchased from the Thompson Creditors Committee, a large block of the Thompson coal lands in Fayette and Greene counties, Pa. Considerable consternation is felt at this action in many quarters. It was at first reported that the H. C. Frick Coke Co. was behind the Piedmont company, color being lent to this supposition by the fact that Mr. Samuel McClay, of Pittsburgh, was named as president of the Piedmont Coal Co., and he is a member of the law firm of Reed, Smith, Shaw & Biehl, attorneys for the H. C. Frick Coke Co.



MARKET DEPARTMENT



Weekly Review

Coal Shortage Continues—Car Supply, Though Improved, Continues to Be a Menace—Stormy Weather Prevents Better Distribution—Influenza Curtails Production—Retail Trade Active.

HAVING received little coal to replenish their stockpiles, public utilities and manufacturing plants along the Atlantic Seaboard still continued to make urgent demands. This may be exemplified by the conditions in New York City, where the largest local traction company, the Interborough Rapid Transit, had but 7,000 tons, and was using 2,200 tons a day, thus making it necessary to consider pooling reserves to tide over the emergency.

Although alarm was taken at the rate with which the supplies were dwindling, no city was actually without coal for its public utilities. Receipts were below normal, but still these receipts kept up to the minimum requirements.

Moderate weather had been prevalent during the week before last and both consumer and operator hoped this would continue, but it changed to colder and brought with it on the Atlantic Coast the worst storm of the winter. This hampered the car dis-

tribution in those sections and also reduced the production at the mines, but at the present writing the outlook favors the idea that the weather will be milder, and the traffic movement should from these indications be slightly improved.

Influenza, bringing with it a larger number of deaths than the week previous, was also a hindrance to the operators. The number of absentees at the mines was greatly increased, and, moreover, the number of men available for train crews was reduced, thus giving the Railroad Administration another possible excuse for not supplying enough rolling stock.

Then, too, in Canada, where an embargo exists against the smallpox, now rapidly spreading along the lake fronts, trade is suspended. However, there is not quite enough coal to meet the entire demand of those lake ports in the United States; much less is there enough to supply points outside the national borders.

Steam sizes are being used in larger

amount than before, especially where there are no other sizes available. Retailers are having a busy season in such sizes as they are able to obtain, but it seems that the anthracite operators have not received all of the cars that were recently sent West to meet the demands in that section or to anticipate its wants. Cars are still being diverted, and shippers still suffer losses due to confiscation made by the railroads.

In the coke regions the demand from the iron and steel plants still continues, but, there too, the inadequate supply of cars affects the producers, so that although there is enough coke obtainable, only a small amount can be shipped.

Bunkering of foreign vessels was still allowed to continue, but the supply to this trade was limited. Then, too, the stormy weather and high tides, possibly the highest tides on record on the Atlantic coast, made it impossible to get these vessels satisfactorily under way.

WEEKLY PRODUCTION

A slight increase in the production of bituminous coal was recorded during the week ended Jan. 31. The total output (including lignite and coal coked) is estimated at 10,638,000 net tons. Compared with the preceding week this was an increase of 175,000 tons, or 1.7 per cent.

The recovery has once more carried the line of 1920 production above that of 1917. Present output is thus again in excess of any attained during the last three years, the period over which the records of weekly production extend. The production of the corresponding week in 1917 was 10,512,000 tons; in 1918 it was 9,492,000 tons, and in 1919, 8,316,000.

Production in the month of January is estimated at 48,732,000 tons. Unless revised downward, this establishes a new record for the month.

The achievement is the more remarkable when it is remembered that it was attained under the handicap of severe winter weather and of a transportation situation of exceptional difficulty resulting from the strike.

The production of anthracite during the week of Jan. 31 is estimated at 1,790,000 net tons, an increase of 80,000 tons, or 4.5 per cent, over the preceding week, but less by 31,000 tons than the output of the corresponding week last year.

The cumulative production since the beginning of the coal year, 1919-20, is now 6,429,000 tons below that of the year 1918-19.

The weekly statistics of beehive coke production published by the Geological Survey are based on reports of cars loaded by the principal coke carriers. The 26

railroads reporting loaded 97 per cent of the rail shipment of coke in 1917. On this basis the output of beehive coke during the week ended Jan. 31 is estimated at 473,000 net tons, an increase over the preceding week. The cumulative production from Jan. 1, 1920, to date is 1,976,000 tons, a decrease of 466,000 tons, or 2.4 per cent, compared with the corresponding period last year.

Atlantic Seaboard

NEW YORK

Storm conditions around New York seriously interfering with movement of coal in harbor. Coal blocked in transit to piers. Pier dumpings far below normal through men not reporting for work. Heavy demand for all domestic sizes. Bituminous market chaotic. Public utilities and traction companies in desperate need for coal. Shipping delayed for lack of bunkers. Bituminous stocks at piers increasing.

Anthracite—The severe snow storm which hit the Atlantic seaboard last week, covering various cities with a foot or two of snow, has almost completely paralyzed the boat movement in New York harbor. Fortunately, household consumers have protected themselves by heavy buying during the earlier part of the winter, and are now in a position to meet such a condition.

The movement of coal in New York harbor has been restricted to about 25 per cent of normal, through the men not reporting for work at the principal piers. There is a good supply of coal on hand at the piers, but this coal has been frozen

tight in the cars, and before being dumped must go through a thawing process to enable dumpings to be carried on.

Reports from the mines indicate that transportation has been seriously interfered with and at certain sections trains were forced to suspend schedules. Therefore within the next few weeks, we can expect smaller receipts of anthracite coal, due to delays en route to the mines. Also difficulties are said to be arising at the mines, due to the railroad companies having trouble in bringing sufficient cars to the collieries to keep them working to capacity.

Current quotations for company coals, per gross tons, at the mines and f.o.b. tidewater, at the lower ports are as follows:

	Mine	F.O.B. Tidewater
Pea.....	\$5.30	\$7.05
Buckwheat.....	3.40	5.15
Rice.....	2.75	4.50
Barley.....	2.25	4.00
Boiler.....	2.50	4.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The bituminous market is in a very precarious position. This is not due to any shortage of soft coal at the piers, to the contrary, the surplus of coal on wheels has been increasing. The situation has become desperate through the inability of the piers to effect dumpings; owing to the piers being partially crippled by the recent snow storm. Also at Arlington, Fort Reading and South Amboy men have been reporting to work very slowly, and lack of labor has played a heavy part in reducing materially the number of barges being loaded.

The heaviest call for coal coming in this distressing period is from the traction, electric and lighting and railroad plants. Surplus stocks at these various large plants have been very slim all winter, and last week the storms came near interrupting the movement of all coal by barges which would have meant the stoppage of all transportation in and around New York, including Brooklyn.

Among the utility plants, the New York Edison Co. is one of the largest consumers. At the height of the storm last week, this company had in its station bunkers 22,045 tons of coal; alongside stations, 19,591 tons; at Shadyside, 7,584 tons, and has received by collier from Hampton Roads, 3,245 tons of Pocahontas coal, making a total of 52,465 tons. This is considered a two weeks' supply.

At this same period another large, the Consolidated Gas Co., had enough coal on hand to carry on operations for nine days; the Brooklyn Union Gas Co. enough for two weeks. The Interborough Rapid Transit Co. at its 59th and 74th St. power plants had a surplus on hand of 6,500 tons, and this tonnage is not a week's consumption. All the utilities are protected by ample contracts and have coal en route to the piers, but the railroads are pursuing their confiscatory methods, are taking loaded coal cars regardless of the character of their ultimate consumers.

The steamship trade have been expensive sufferers from the delay in securing coal in the harbor. Large liners have been delayed in port from four days to a week waiting for sufficient bunkers. Loaded cargoes can quickly secure the premium of \$1.35 for spot bunker business.

Government prices prevail on all spot business, which are as follows:

	Mine	F.O.B. Tidewater
Broken.....	\$5.95	\$7.80
Egg.....	6.35	8.20
Stove.....	6.60	8.45
Chestnut.....	6.70	8.55

PHILADELPHIA

Anthracite stirred by winter storms. Dealers meet demand for fuel. Pea stocks come in handy. Mines handicapped by weather. Car supply cut. Nut in chief demand, followed by stove and egg. Pea draggy. Independents maintain their 75c. premium. Spring prices under discussion. Buckwheat only active steam coal. Bituminous unimproved. Car supply chief trouble. Heavy snow delays delivery of coal. Consumers anxious for coal.

Anthracite.—With an old fashioned snow-storm descending upon the city this week, the retail dealers were beset with requests for coal. With snow on three successive days, and with eight to ten inches on the ground, deliveries were only made with the greatest difficulty. Fortunately, with the large number of people who had put in their coal during the summer, the urgent cases were reduced to a small proportion. As it was, the storm proved to the consumers more than anything else, the advisability of having their supplies on hand.

So far as stocks on hand were concerned the dealers were not in very good shape to stand heavy demands for fuel. There is an extremely small tonnage of stove and nut on hand, and even egg had melted away to the point where most dealers were anxious to replenish. Fortunately for those who simply had to have fuel of any kind, the stocks of pea coal were well able to meet their needs, and the tonnage of this size put out was real encouraging to those dealers who were becoming distressed with the quantity of this size in the yards.

The receipts of all sizes this week have been most meager, and very little prospect is held out for the next week. Storm conditions were even more severe in the anthracite region and on one day this week every mine was closed down due to the men being unable to reach their work through the drifted snow.

The only encouraging feature to the local trade was the fact that with heavy storms outside the bay all tide shipments to Northern coast points were shut off. The result of this was that much coal originally consigned to the piers was diverted to line consignees. However, even a large percentage of this coal was simply consigned all-rail.

Egg had begun to waver and some dealers had begun to report having fair stocks of stove and nut, until it began to look as if a break must come. This is now changed for the time being, but it is not believed that the individuals can insist much longer on their 75c. differential; at least it is not believed that they can carry it right up to April 1.

Of course many shippers had been getting even more than 75c. on stove and nut, but the demand at these fancy prices had ceased several weeks since. Despite weather conditions pea coal continues in most abundant supply, and no dealer now expects to be able to clean up his stocks by spring.

Bituminous.—With the coming of heavy snows the soft-coal situation has grown more acute. Less coal has come into this market this week than in any week for several months past. Despite the fact that the railroads had promised a much better car supply by the diversion of cars from other districts, it would appear that the weather has interfered with their plans. Many of the mines in the Pennsylvania district have received only 15 to 25 per cent of their requirements. In addition there has been almost two feet of snow in that district and the movement of the loaded cars has been very much delayed.

The same holds true of the coal destined here from the Fairmont region, where the haul over the mountains is even more severe than in the Pennsylvania district. Consumers are extremely anxious for coal and are calling on the shippers daily for increased shipments, and from the present outlook it would appear that the situation will likely be somewhat worse before there is any real improvement. There is no coal whatever in the spot market. Even contract customers are receiving but a portion of the fuel consigned to them, as much is confiscated by the railroads.

Eastern-Inland

PITTSBURGH

Car supplies not increased. Better situation expected soon. Rumor of demurrage charge revision.

Car supplies in the Pittsburgh district have shown no material improvement, and there is no question but that there has been some loss. The movement is still a long distance from the 70 per cent which it was intimated at the time of the placing of the price restrictions on coal would mark the point at which it would be considered safe to remove the price control.

There is a somewhat larger volume of coal moving in the open market, and buyers in urgent need of coal are generally able to pick up some, though they rarely get the tonnage or the quality they desire.

A much easier market situation is expected to be developed by the fore part of March, through the double influence of better weather, increasing the railroad movement, and of there being a seasonal decrease in the consumptive demand.

There are rumors that the Interstate Commerce Commission has ordered reductions in demurrage charge in coal, but the precise scope of the changes it not known. The operation of the usual demurrage rules, when the movement of coal has been so peculiar, has worked a hardship to many consignees.

The market remains quotable at the Government limits: Slack, \$2.10; mine-run, \$2.35; screened, \$2.60, per net ton at mine, Pittsburgh district.

COLUMBUS

Demand for all grades is increasing, while products are still held below the 50 per cent mark by lack of cars. No immediate hope for improvement is seen. Railroads are in bad shape generally.

A feature of the Ohio coal trade is the strong demand for all grades, including both steam and domestic sizes. With short stocks in every locality buyers are placing orders briskly and all ask for immediate shipment. With car shortage growing worse instead of better, production in all Ohio fields is still low and this is having its effect on general market conditions. The tone of the market is good and a brisk demand is expected for several months.

Many causes are given for the growing car shortage. Principally is the lack of cars due to the fact that during the strike loaded cars were sent far and wide and the empties have not yet been returned. Still another cause is the lack of motive power on all of the railroads, which mitigates against a promptly handling of both loaded cars and empties. Then the influenza epidemic has played havoc with the train crews and as a result conditions are getting worse as the time passes. The severe winter has also had its bearing on the railroad situation.

Retail trade is exceedingly strong in every respect and dealers are clamoring for stocks. In many cases retail stocks are very low and dealers have been compelled to restrict orders to small lots. Practically no Pocahontas lump is coming

in now and only a limited amount of mine-run. Some West Virginia splints are being sold as a fair tonnage is arriving. The large part of the retail trade, however, is confined to Hocking and Pomeroy varieties. Retail prices are firm at the levels which have prevailed for several weeks.

Hocking lump retails at \$6.25 and mine-run around \$5.75 to \$6. West Virginia splints sell at \$7 for lump. Pocahontas mine-run is quoted at \$7.50@7.75, while Pomeroy lump sells at \$6.50. Jackson lump retails around the \$7 mark.

Steam trade is also strong, as many of the larger consumers are short on stocks. Reserves were reduced during the period of suspension and purchasing agents have been unable to accumulate a surplus since that time. All lines of manufacturing are buying actively with iron and steel concerns and rubber plants in the lead. Public service corporations are also good purchasers. Hospitals and schools are now pretty well supplied. On the whole the steam trade is showing more strength in every section.

CINCINNATI

While there is no concealment of the fact that there is a pronounced car shortage in this territory hampering operations in West Virginia and Kentucky fields, reports from throughout Ohio and Indiana district indicate an increase of more than 100 per cent in cars loaded with coal.

For the last two weeks of January there were 14,470 cars loaded with coal. For the last two weeks of January 1920 there were 31,305 cars loaded with coal in this district. Delegates from these fields have gone to Washington and returned with promises, but no cars in sight to relieve the situation. Right now there is a shortage of fuel for domestic and industrial uses.

Immense quantities of coal poured into the Cincinnati terminal last week, and were promptly sent on their way. There is no congestion of any kind in the Cincinnati terminal, and no embargoes on it, while in other terminals, Toledo in particular, there are much congestion and a number of embargoes.

Operators say the lack of cars is decreasing production 60 per cent. Labor is also effecting further decreases. The situation is close to a famine in Ohio, especially in the small towns. One of the largest coal operations in this vicinity mined 19,000 tons of coal on its biggest day last week.

The demand is keen for all grades, although it is believed that if all mines in this locality had full car supplies the deficit would be made up quickly.

Instead of improving, the car supply has been even worse that it was last week. Dealers attribute this to a number of causes.

Coal companies report that some of their money is coming in from confiscated and diverted tonnage, but the bulk of it is yet to be heard from. Operators are not taking on much new business as they are far behind on deliveries, and no one wants new business for future delivery at government prices, with a possible chance of the peace treaty knocking the Lever Act out of commission.

Receipts by river were below normal the past week. Dealers are not optimistic as to the prospect of any immediate relief. No one sees any chance of the situation being straightened out to pre-war basis until spring.

Several dealers report that they have still deliveries to make on last summer's orders. The tonnage allotted to jobbers is being decreased weekly according to reports. The mild weather in this vicinity during the past ten days has helped the situation considerably.

Southern

LOUISVILLE

Better production reported from the state fields. Demand for steam coal continuing good, with block not quite so active, due to retailers' stocks showing improvement, and lack of domestic demand.

As a result of numerous conferences in Washington with Congressmen, Senators, Railroad Administration officials, committees, etc., and the coal operators' committees from Kentucky, there has been some improvement noted in car supply in Kentucky, and production is on the up grade. It is claimed that the state showed a production of better than sixty per cent last week on the Louisville & Nashville lines, with the exception of the Hazard field, which ran about fifty-four per cent. Other railroads

are managing to provide better car service as a whole.

Demand for steam coal continues very strong, as many industrial concerns are short and are stocking all the coal they can get just now. Prepared sizes are still in good demand, but not as active as they were, as retailers are fairly well stocked, and report a very slack demand from the domestic consumers, who as a rule are well supplied with stocks from last summer and fall, as the winter has been as mild as that of last year, and consumption has been light.

An epidemic of smallpox in the Harlan fields is general, although the cases reported show a light form. It is feared that the disease may spread, and the State officials are discussing plans for placing a quarantine, and would have done it before except for the fact that coal is needed, and it is a bad time to block production.

Heavy rains in eastern Kentucky have resulted in many bridges, rights of way, etc., being washed out of branch lines. Whitesburg reports that it will probably be several weeks before service will be resumed on Carr's Creek and Rockhouse branches of the Louisville & Nashville, into eastern Kentucky, as much track has been totally swept away.

Lake Region

TORONTO

Retail Government prices prevail.

Anthracite, egg, stove, nut and grate.....	\$12.75
Pea.....	11.25
Bituminous steam.....	9.00
Slack.....	8.00
Domestic lump.....	9.00
Cannel.....	12.50
Wholesale, f. o. b. cars at destination—	
Three-quarter lump.....	6.75
Slack.....	6.00

BUFFALO

Still the car shortage. Buffalo is sure that it is to blame for the coal shortage. Local association contradicts the opinion expressed in Washington. No relief yet. Anthracite rather scarce.

Bituminous—The situation does not change much. All shippers are busy trying to keep up the supply. They say it would be easy enough if the railroads would stop diverting it to other sources. If they would merely use what they need at present there would not be much complaint, though the idea is that the roads should buy their coal as other consumers do and pay for it when they buy it. This they would never do and it is to be hoped that the agitation is kept up till they are obliged to fall into line, like other consumers.

The chief complaint against the Railroad Administration is that it has lately diverted coal from certain needy consumers and turned it over to others who did not need it any more than those did to whom it was consigned. At the same time it is most discouraging to sell a thing and then find that it is in the hands of someone else and out of your control. So much of this sort of thing has been done lately that some of the city shippers have about given up trying to do business till there is a better understanding with the roads.

At the same time it is the belief of all bituminous shippers that there would be coal enough mined to meet all needs if the cars were moved promptly. Reports come from all mining sections that the sidings are full of cars loaded with coal. Of late the weather has had much to do with the delays, some storms being so severe that trains could hardly be moved at all, but at the same time shippers say that, though coal is going to be short for some time the situation can be kept from getting any worse if the railroads will do their share of the work.

Buffalo is suffering along with other localities. Some of the factories have only a few days' supply and in some instances shippers, though with contract demand for all the coal that the roads will let alone, have come to the rescue and helped out this or that institution or factory.

Prices are not talked about much, but are supposed to be based on the government regulation of \$4.70 for Allegheny Valley sizes, \$4.50 for Pittsburgh and No. 8 lump and three-quarter and \$4.25 for all mine-run and slack, with \$4.70 for Pennsylvania smithing and \$4.60 for smokeless, all per net ton, f. o. b. Buffalo.

Anthracite—The consumption of anthracite has been so heavy all winter that it has been a hard matter to keep the sup-

ply up to the demand. While the weather is not now so severe as it was it is anything but mild most of the time. The trade will take a long breath as soon as the sunny days of March are here, for the consumer is no longer scared and will not order more than he needs. Any day may now see the letting up of the winter severity. It took place on Feb. 6 two years ago. The solid freezing weather after that date gave way to a goodly amount of mild days and the situation became easy.

Buffalo does not hear much of the Canadian situation, for the smallpox embargo is still on and few members of the trade there are coming here. It is really quite as well, so far as the trade as a whole goes, for the shippers here try to distribute the supply according to the needs and what one dealer gets by personal application is merely diverted from someone else. At the same time the rail line trade west is not likely to be satisfied till it is warmer weather. The Upper Lake situation is fairly good, due to the big shipments in that direction last fall, though it does not now look as if any leading into vessels would be done before spring. Some seasons there are hundreds of thousands of tons ready to go as soon as the lakes open.

CLEVELAND

All of the local markets appear to have settled down to a low level which the trade believes will continue at least until March 1. Receipts of all grades still are far below normal, but apparently sufficient to satisfy all requirements.

Bituminous—Conditions in the steam-coal trade are little changed, with the possible exception that receipts in the past week have decreased slightly. This reflects poorer car supply at eastern and southern Ohio mines. Moderating weather, it is believed, will work for improvement in the next few days. Because of a shortage of engine crews—due to the influenza epidemic—considerable time is being lost in the yards here.

Despite the unusually small number of cars of steam coal now coming into Cleveland, so far as known no industry yet has had to suspend operations for lack of fuel. Minimum requirements are being met, and that is all. The local trade considers it is doing remarkable, in the light of difficulties confronting it. Demand from apartments and domestic consumers has increased somewhat; to this class of consumers dealers are allotting their supplies on the basis of past purchases.

Belief still prevails here that about March 1 government maximum price regulations will again be abrogated. By that date receipts of bituminous coal here will be close to 70 per cent of normal, it is believed, and most of the domestic demand for this winter will have been satisfied. An open market is bound to result in increased prices, with supply so small and demand so large.

Pocahontas and Anthracite—Demand for these grades, like that for domestic bituminous, has taken on new life the last few days. Dealers are paring down allotments to one ton to one and a half tons. Were all of the Pocahontas and anthracite booked by dealers to come through without being diverted the supply would be ample, dealers say. Diversion constitutes their biggest problem.

Lake Trade—Iron ore selling now is on in earnest, and this is the forerunner of the early fixing of carrying charges. Fixing of ore carrying charges always is followed by the same action in regard to coal. Lake vesselmen expect to get 1918 charges on ore, and this presumably will be the case with coal. In 1918 the carrying charge on coal per net ton from Lake Erie ports to Duluth was 48c. and to Lake Michigan 55c. The 1919 and 1917 rates were 42½c. to Duluth and 47½c. to Lake Michigan. Increased car supply at the head of the Great Lakes is fast making the docks bare, and early-season shipments will be limited only by receipts at the Lake Erie loading ports.

Prices of coal per net ton delivered in Cleveland are:

Anthracite—Egg, \$12.20@12.40; chestnut, \$12.50@12.70; grate, \$12.20@12.40; and stove, \$12.40@12.60.

Pocahontas — Forked, \$10.50@11.00; shoveled lump, \$9.00@9.25; and mine-run, \$8.00@8.25.

Domestic bituminous—West Virginia splint, \$8.30; No. 8 Pittsburgh, \$6.85@7.00; Massillon lump, \$7.40@7.65; Cannel lump, \$11.00; and Coshocton lump, \$7.35.

Steam coal—No. 6 slack, \$5.20@5.40; No. 8 slack, \$5.20@5.50; Youghiogheny slack, \$5.25@5.50; No. 8, \$6.00@6.25; No. 6 mine-run, \$5.25@5.50; and No. 8 mine-run, \$5.85@6.00.

DETROIT

Consumers of steam and domestic coal in Detroit are again confronting a shortage due to failure of railroad transportation facilities.

Bituminous—Though hundreds of cars filled with coal for Detroit are reported on railroad sidings between the mines and Detroit, very little coal is being brought into the city. The blame for this situation is placed with the federal railroad administration.

Alexander Dow, president of the Detroit Edison Co., asserts that many Detroit industrial plants will be compelled to close within 10 days, unless there is hastened delivery of the delayed coal shipments. With only six days' supply of coal on hand, Mr. Dow says the Detroit Edison Co.'s daily receipts do not average a one-half day's supply, although coal in quantity sufficient to meet the company's full requirements is somewhere on the way between the mines and Detroit. Messages have been sent to Congressman Doremus in Washington and A. T. Hardin, Regional Director of the Railroad Administration in New York, urging that action be taken immediately to relieve the situation.

Jobbers assert that representatives of the Railroad Administration in Ohio are continuing the confiscation of coal sent to Detroit, and are diverting it to supply the needs of railroads which neglected to make provision for their fuel requirements last summer. This is regarded as an injustice to Detroit users of steam and domestic coal.

Cincinnati is reported to have a generous supply of coal on tracks, but Detroit consumers are still receiving notifications from the regional director there of confiscation and diversion of coal consigned to them for use of railroads and industries in Ohio.

The failure to get coal to Detroit is attributed chiefly to the railroad shortage of motive power and in part also to the congested terminal yards in Toledo.

Anthracite—Supplies of anthracite in the yards of retail dealers have been largely depleted by the increased demand of household consumers, resulting from the long period of very cold weather in January. While temperature conditions have moderated and the season is now well advanced, the return of extremely cold weather would be likely to find many of the dealers unable to provide for requirements of their customers.

Middle West

MIDWEST REVIEW

With the car shortage as it is, and with shipments delayed, it is very easy to see that there is a strong market for coal, practically all kinds, and all sizes, both steam and domestic. A week or so ago, there appeared to be a slight softening in the market on steam sizes, but this has changed completely, as all coals are now in strong demand.

A representative of the Coal Age spent part of the week in the outlying districts of this territory, in order to get a true idea of what the coal situation is in the middle west. In brief, the situation in the country is that there is a serious coal shortage. Hardly a retail dealer had enough coal in his bins to take care of his trade more than a few days. One of the largest retail dealers in the city of Rockford has had his bins empty for some time. As fast as the mines where he buys his coal ships the cars to him, they are unloaded into his waiting wagons, and delivered to his trade. Practically every dealer has coal in transit, but the transportation question is so unsettled at this time that he cannot count on when his coal will arrive.

The situation with the steam trade is almost the same. Steam coals, however, have not been so scarce as domestic coals. The average steam plant in the territory visited, has from one to two weeks' supply on hand. Of course, manufacturers have some storage coal, but we are talking about the average plant, not the exceptional one. The manufacturing class of consumer has coal in transit, too, but is unable to count on when this coal will reach destination. It was found that one reason for the poor service that the railroads are giving is that their crews are badly crippled with the "flu."

Many freight yards, as well as freight trains, had but one half of their normal crews, the other half being ill or absent for one reason or another. An additional reason why the railroad service is poor at this time is that the men appear to

be very discontented with the present wage scale. They feel that they ought to have more money, and ought to have it before the Railroad Administration goes out of office. This has put them in a discontented frame of mind, and the efficiency per man has dropped considerably on this account.

One item of great interest to the coal industry, in Illinois, is that one of our largest producing companies has discontinued selling its coal at the Government prices. This company is now selling its prepared coal at \$3.10 f.o.b. mines, these mines being located in southern Illinois, and the Government price being considerably below this \$3.10 figure. The reason for this is that the company has been operating for the past six or eight weeks at a loss, as they have been unable to sell their coal at the Government price, and make both ends meet.

The legal advisors of this company argue that under the Levee Act the company is entitled to a fair profit, and in raising the price to \$3.10 they are fully covered. It is generally believed, in coal circles, that this company is acting entirely within its rights, and cannot be molested. It will be interesting to note whether other coal-producing companies follow this example.

CHICAGO

Retail trade in Chicago is far better off than others.

A great deal of coal coming into Chicago, comes in direct and this coal is shipped direct from the mines to the city, on the originating line. This does away with delays at transfer points, etc., and consequently the city retail trade are able to figure, from day to day, just what their supply will be.

Eastern coal continues to be extremely hard to get, and is very slow in arriving in Chicago. There is a big demand but very few dealers have been able to place orders. Coal from the West Virginia, Pocahontas and New River districts and Block coal from eastern Kentucky, are most in demand, after anthracite.

Demand for coal in this city is much better than it was a week or so ago, as the car shortage has shown both dealers and manufacturers the difficulties the operators are having in producing enough coal for all. All grades, both steam and domestic, are holding firm, and will continue to be firm in price, until the car shortage situation clears up, which will not be for some few weeks, at least.

Illinois

Southern Illinois— Franklin, Saline and Williamson Counties, etc.	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$2.55	\$1.32
Mine-run	2.35	1.55
Screenings	2.05	1.55

Central Illinois— Springfield District:	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$2.55	1.32
Mine-run	2.35	1.32
Screenings	2.05	1.32

Northern Illinois—	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$3.25	\$1.24
Mine-run	3.00	1.24
Screenings	2.75	1.24

Indiana

Clinton Fourth Vein District—	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$2.55	\$1.27
Mine-run	2.35	1.27
Screenings	2.05	1.27

Brasil Block—	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$3.60	\$1.27
Mine-run	3.30	1.27
Screenings	2.05	1.27

Knox County, Fifth Vein District—	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$2.55	\$1.37
Mine-run	2.35	1.37
Screenings	2.05	1.37

West Virginia

New River and Pocahontas—	F.o.b. Per Ton	Chicago Rate to
Prepared sizes	\$2.60	\$2.60
Mine-run	2.35	2.60
Splint		
Prepared sizes	\$2.75 to \$3.00	\$2.60

ST. LOUIS

Car shortage bringing disaster to the coal industry in Middle West. Motive power partly the cause. Warm weather causes easing up in demand. Country districts suffering on account of embargoes. Steam demand keeps up.

The local situation continues fair. This is because embargoes on trunk lines West keeps coal in the local switching limits. The car shortage is worse now than at any previous time. Warm weather has made it easier for the shipper who couldn't ship, but even at that, many outside

places are short of fuel. On the Missouri Pacific lines South no coal is moving because that road has cars for about two days work a week, and the road needs that coal for its own use and is taking nearly everything loaded.

In the Cartersville field of Williamson and Franklin Counties the work is light everywhere, although the Chicago, Burlington & Quincy is doing far better than any other road in equipment. A little more than half time is the best that any mines get even when located on three or more roads.

Labor is short, but the men are working at every chance. Influenza is raging through the Illinois coal districts, not so much with the miners as with their families, and this is cutting tonnage down in some places.

Railroad tonnage continues heavy in this district. Conditions are much the same in the Duquoin field, but two days a week is the best that the Illinois Central R.R. can give cars for.

In the Mt. Olive field the mines work almost three days a week. Railroad tonnage is good here, but embargoes cause a one-sided distribution. Steam demand is good, and domestic is far behind on shipments.

In the Standard field the railroads have let up some on their tonnage, but this does not release any coal for the open market on account of no cars. The few cars that are furnished are those from the East. It is impossible to get men to unload them, and at many mines they are too high to go under the tippie.

The market on this coal is easy. Embargoes force it for local use, and while there has been no surplus, lump has been plentiful. For country shipments it is impossible to make promises. Steam sizes are in good demand.

Prices on all coals remain firm. Almost no Franklin County coal is coming in here since the United States Attorney has ruled that on orders taken prior to Oct. 30 where no price was specified, the price to be charged was the government price, regardless of how the acknowledgement was worded.

The United States Attorney at East St. Louis is now charged with an investigation to determine whether there has been a violation of the anti-trust laws in these operators fixing prices and selling conditions.

No smokeless is coming in and practically no anthracite. Prices are the same as last week.

Prices per net ton bituminous coal f.o.b. mine today as compared with a year ago are as follows:

	Williamson and Franklin Counties	Mt. Olive and Staunton	Standard
Prepared sizes (lump, egg, nut, etc.)	2.55@2.70	2.55@2.70	2.55@2.70
Mine Run	2.35@2.50	2.35@2.50	2.35@2.50
Screenings	2.05@2.20	2.05@2.20	2.05@2.20

Williamson-Franklin rate to St. Louis is 1.10, other rates 0.95.

MILWAUKEE

Government prices are as follows:

Anthracite	
Chestnut	\$12.70
Stove	12.60
Egg	12.40
Pea	11.20
Buckwheat	9.75

Bituminous	
West Virginia, splint screened	8.00
Hi-Heat	8.00
Hocking, screened	7.75
Pittsburgh, screened	7.75
Pocahontas mine-run	8.75
Pocahontas, screened	11.00
Cheerful Chunks	9.50
Smithing	8.75
Cannel	12.00

Steam Coal

Youghiogheny, screened	7.00
Youghiogheny, pile run	6.75
Youghiogheny, screenings	5.75
Pittsburgh, screened	6.75
Pittsburgh, pile run	6.50
Pittsburgh, screenings	5.50
Hocking, screened	6.50
Hocking, pile run	6.50
Hocking, screenings	7.50
West Virginia, splint screened	7.50
West Virginia, pile run	7.50
West Virginia, screenings	5.50
Kentucky, screened	7.75
Kentucky, pile run	7.55
Kentucky, screenings	5.75
Pocahontas, mine run	7.75
Pocahontas, screened	11.00
Pocahontas, screenings	6.75
Smithing	7.75
Kanawha Gas	sold up

Bunker Coal for Steamers and Tug

Pittsburgh, lump	6.25
Pittsburgh, pile run	6.00
Youghiogheny, lump	6.50
Youghiogheny, pile run	6.25

Dealers report an unsatisfactory market, owing to a scarcity of popular grades of coal. Anthracite about exhausted. All Eastern coal sold up.

There is a fair demand for coal, but the supply is unsatisfactory and dealers are having considerable trouble in satisfying their trade. Anthracite is about sold out, except pea and buckwheat, of which there is a reasonable amount in stock. Pocahontas mine run is the only grade of that coal to be had. There is only enough Eastern coal on hand to meet contracts and dock companies are urging those holding contracts to take in their supplies at once.

The transient trade will have to depend upon rail supplies from now on. The rail situation is better, and cars are moving in and out of the yards in a more satisfactory way than has been the case for weeks. Illinois coal is arriving on track daily, but very little Eastern coal is finding its way here at present. Prices continue unchanged.

Coke

CONNELLSVILLE

Connellsville production very steady. By-product greatly increased, 15 per cent more pig iron being made in January than in December.

The Connellsville coke trade has given a remarkable exhibition of steadiness and lack of developments since Christmas. The curtailment in production resulting from that holiday was recovered from, and from that time to now there has been practically no change in the rate of production.

The rate has been far from satisfactory, seeing that many more blast furnaces desire a supply of coke than two months or three months ago, but the railroads have shown at any rate that they are not really disorganized, in that they have furnished substantially the same car supply each week since Christmas. The Connellsville Courier reports show that since Christmas the weekly output has varied no more than about 1,000 tons either way from a mean of about 240,000 tons, which means a remarkably steady gait.

The production of pig iron in the United States in January was 15 per cent greater than the output in December, the increase proving quite a surprise when there was so much complaint in January about coke shortage. Undoubtedly there was a coke shortage, but the furnaces were endeavoring to operate at a much heavier rate than formerly. The increase in supply of coke in January chiefly came from the by-product ovens, which were better supplied with coal, although they are not yet fully supplied.

The coke market remains stagnant, as the output is going out on contracts. Many of the contracts were made originally at above the Government limits, reinstated Dec. 8, and while it seems clear that the regulations require that invoice prices on such contracts be the Government limits, less than half the coke involved has been adjusted to the lower price. The market remains quotable at \$6 for furnace, \$7 for foundry and \$7.30 for crushed, per net ton at ovens.

The Courier reports production in the Connellsville and Lower Connellsville regions in the week ended Jan. 31 at 241,935 tons, an increase of 2,329 tons.

BUFFALO

Coke—The demand is increasing all along the line. Not only are the smaller private consumers in the market, but the furnaces are increasing their demand.

If the jobbers were allowed and profit on it they would be able to work up a good trade, but as it is they only sell to accommodate for the producers will by no means favor them with a reduction of price. The output can be sold direct.

Quotations continue at \$9.60 for 72-hour Connellsville foundry, \$8.60 for 48-hour furnace, and \$7 for off grades, with \$8 for domestic sizes. It appears that the market for Lake Superior iron ore is good, so that the lake vessel owners are trying to get better carrying rates for next season. The old dollar rate from Duluth to Buffalo was cut to 80c. last season and the vessels made a poor showing, so the effort is making to restore the rate.